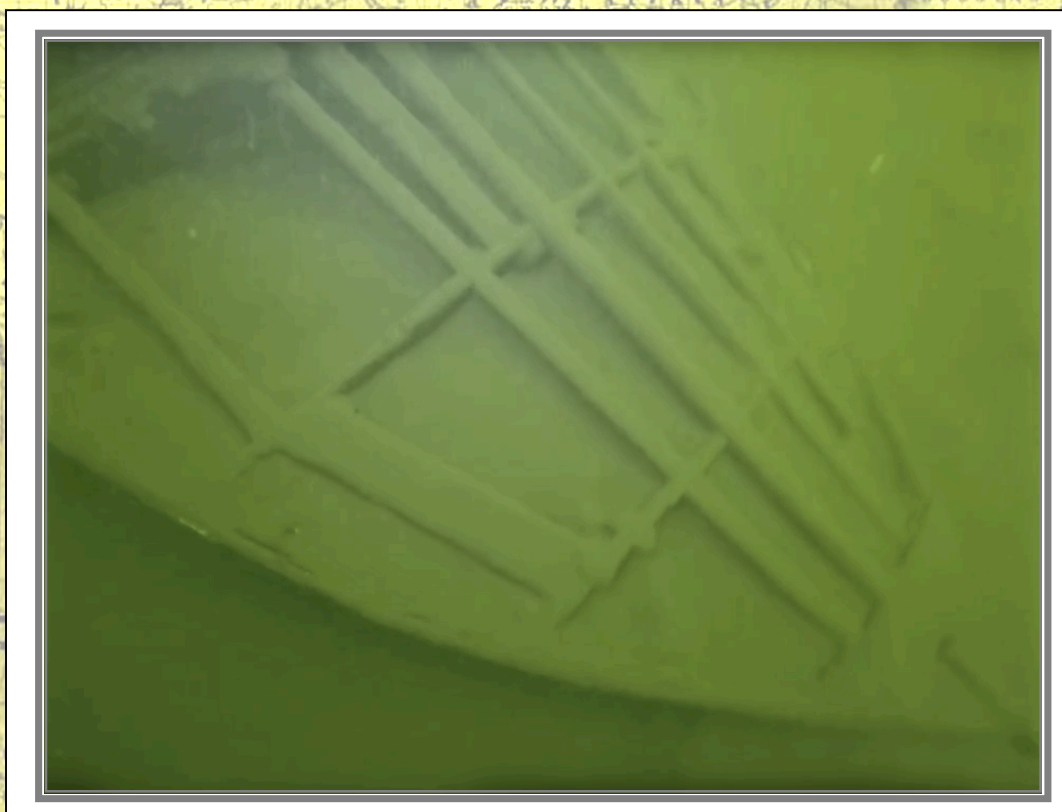


# MARITIME HERITAGE MINNESOTA



Ann Merriman  
Christopher Olson

## Lake Minnetonka Nautical Archaeology 7 Project Report



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Ann Merriman, Christopher Olson, and Maritime Heritage Minnesota



## Acknowledgments

Maritime Heritage Minnesota (MHM) thanks the People of Minnesota for their support of the Minnesota Historical and Cultural Heritage Grant program of the Arts and Cultural Heritage Fund of the Clean Water, Land and Legacy Amendment; without the MHCH Grant MHM received to conduct this project, the work would not have been undertaken. MHM would also like to acknowledge the Grants Office of the Minnesota Historical Society for their expertise. We thank Bruce Koenen and Amanda Gronhvd of the Office of the State Archaeologist for their efforts. MHM thanks John Nordby of the Department of Natural Resources for his time and patience with our requests for information. MHM thanks friend and supporter Mike Brill for his input, support, and suggestions. MHM could not have completed this project without the in-kind support of volunteer divers Josh Knutson, Kelly Nehowig, Ed Nelson, and Mark Slick. MHM thanks these talented and ethical men for their time and skill. This project could not have been completed in a timely fashion without the consideration of MHM's Chair and Commodore Michael F. Kramer for the on-lake storage of MHM's boat. Lastly, MHM thanks our Board of Trustees Mike, Deb Handschin, and Steve Hack for their continual support.

### Maritime Heritage Minnesota Staff, Volunteers, Board of Trustees, & Mascots





*“ACHF grants have allowed a small St. Paul-based nonprofit, Maritime Heritage Minnesota (MHM), to re-establish the discipline of underwater archaeology in Minnesota. Without this support, MHM could not have conducted its groundbreaking nautical archeological and maritime historical research.”*

*~Steve Elliott, Minnesota Historical Society CEO and Director, January 2015*

## **Introduction**

Wrecks and the artifacts associated with them tell a story. Removing or otherwise disturbing artifacts, treating them as commodities that can be sold, obliterates that story. Nautical archaeological and maritime sites are finite, and are significant submerged cultural resources. Nautical, maritime, underwater, maritime terrestrial – Maritime Heritage Minnesota's (MHM) deals with all of these types of sites throughout the State of Minnesota. MHM's Mission is to document, conserve, preserve, and when necessary, excavate these finite cultural resources where the welfare of the artifact is paramount. MHM is concerned with protecting our underwater and maritime sites – our shared Maritime History – for their own benefit in order for all Minnesotans to gain the knowledge that can be obtained through their study. MHM's study of wrecks does not include the removal of artifacts or damaging the sites in any way. MHM does not raise wrecks or 'hunt' for 'treasure'. Submerged archaeological sites in Minnesota are subject to the same State statutes as terrestrial sites: the Minnesota Field Archaeology Act (1963), Minnesota Historic Sites Act (1965), the Minnesota Historic District Act (1971), and the Minnesota Private Cemeteries Act (1976) if human remains are associated with a submerged site. Further, the case of *State v. Bollenbach* (1954) and the Federal Abandoned Shipwrecks Act of 1987 provide additional jurisdictional considerations when determining State oversight and "ownership" of resources defined by law as archaeological sites (Marken, Ollendorf, Nunnally, and Anfinson 1997, 3-4). Therefore, just like terrestrial archaeologists working for the State or with contract firms, underwater archaeologists are required to have the necessary education, appropriate credentials, and hold valid licenses from the Office of the State Archaeologist (OSA).

MHM completed two side and down-imaging sonar surveys of Lake Minnetonka in September-November 2011 and May-June 2012 – the Lake Minnetonka Surveys 1 and 2 Projects (LMS-1, LMS-2). Prior to MHM's two comprehensive surveys, there was one recognized nautical archaeological site on the lake bottom and another five wrecks were known. MHM completed the Lake Minnetonka Nautical Archaeology 1-6 Projects (LMNA-1, LMNA-2, LMNA-3, LMNA-4, LMNA-5, LMNA-6) between 2012-2016. At the beginning of the Lake Minnetonka Nautical Archeology 7 Project (LMNA-7) in early June 2017, there were 59 known wrecks (including the Lake Minnetonka North Arm Dugout Canoe removed from the lake in 1934), 23 maritime sites/cultural resources, 1 doodlebug, 6 cars, 1 truck, 1 snowmobile, and 16 'other' objects identified on the bottom of Lake Minnetonka.



## **Preface**

During the Lake Minnetonka Nautical Archaeology 7 Project (LMNA-7), MHM investigated 2 previously documented wrecks and one object in order to answer specific questions about their natures, along with 38 unknown anomalies. The fieldwork was conducted from early June to early September 2017.

## **Results of the Lake Minnetonka Nautical Archaeology 7 Project**

### **Research Design**

The purpose of the LMNA-7 Project was to answer questions about known wrecks, determine the nature of specific anomalies, and to continue MHM's sediment build-up study in order to increase the collective maritime archaeological and historical knowledge of Minnesotans. MHM determined which anomalies would be investigated from an analysis of sonar data that suggested they were submerged cultural resources. Each anomaly was assigned a number upon its recognition as a possible site. The 38 unknown anomalies examined during the LMNA-7 Project were A84, A76, A88, A90, A113, A117, A125.3, A129.6, A256, A456, A465, A475, A544b, A579, A581, A590, A614, A623, A625, A630, A646, A648, A649, A653, A650, A651, A654, A670, A671, A673, A674, A675, A676, A689, A690, A691, A692, and A694. The 2 known wrecks revisited during this project were the Small Utility Wreck Site (Anomaly 601, now known as the Herter's Model Hudson Bay Wreck) and the Burned Fiberglass Wreck Site (Anomaly 600). Anomaly 599, the Anchor, Metal, Glass, and Wood Site, is the 'object' MHM investigated for a second time – it is now known as the Possible Buried Car Site. Using data accumulated from the fieldwork as a starting point, MHM conducted research to place newly recognized nautical archaeological sites and anomalies into their historical contexts. Minnesota Archaeological Site Forms were filed with the OSA when appropriate.

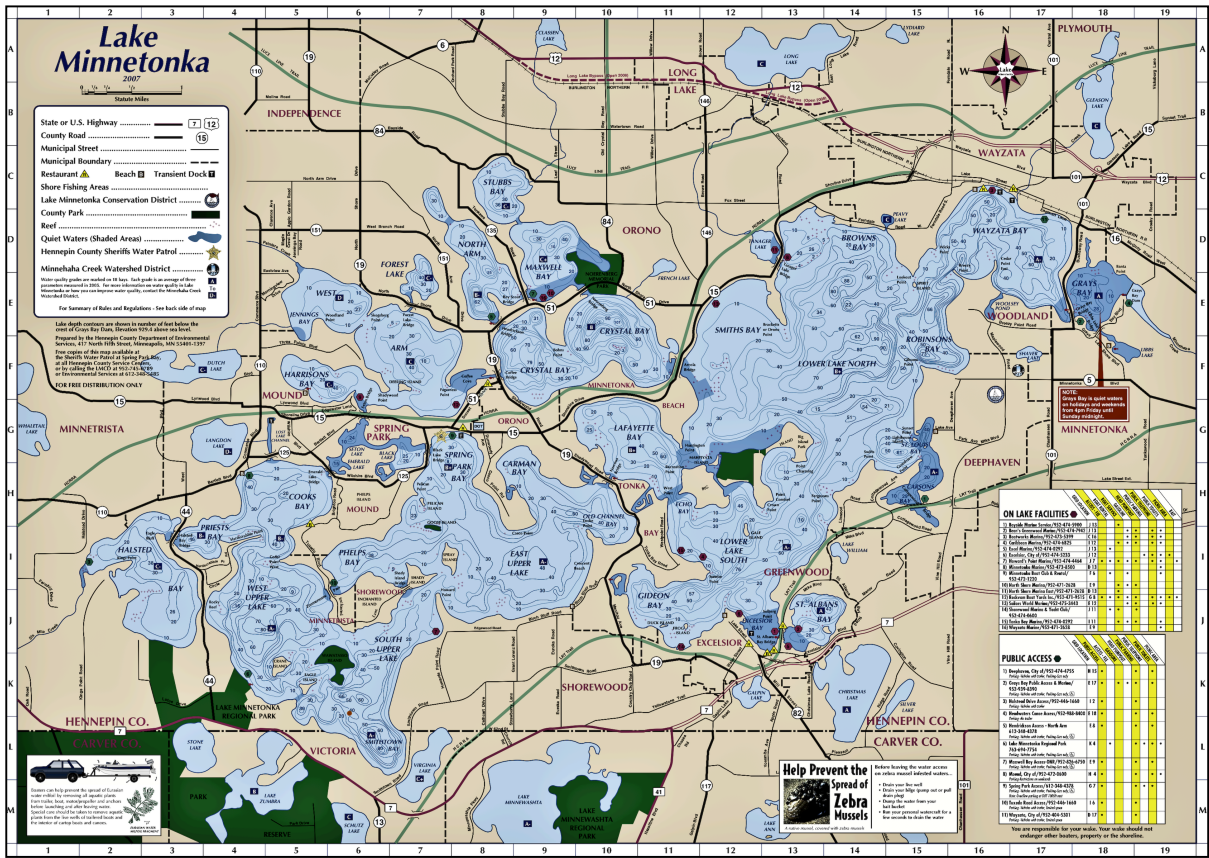
### **Methodology**

The methodology used to identify and rudimentarily document underwater archaeological anomalies is straightforward. MHM used the GPS coordinates of a wreck or an anomaly to drop a weighted diver down buoy near the target. The dive boat anchored a short distance away from the buoy and divers geared up for the dive. At any given time, there were between two and four divers underwater. If the buoy anchor weight landed near and sometimes on the anomaly or wreck, no search for the target was conducted. However, for a variety of reasons, a brief search for the target was conducted until it was located or it was determined that the anomaly was a false sonar return. If a cultural or natural resource was located, the divers photographed and recorded video of the site or object, logged its basic measurements, examined any obvious attributes, and measured sediment build-up (if appropriate).



Results

After the completion of the LMNA-7 Project fieldwork in early September 2017, there are now 66 identified wrecks on the bottom of Lake Minnetonka or that were once on the bottom, including a Woodland Culture dugout canoe removed from the lake in 1934. Of these wrecks, 41 of them have 40 Minnesota archaeological site numbers; 2 wrecks are features of one site. Further, 4 other types of maritime sites have archaeological site numbers and there are 25 maritime sites or objects without numbers. Additionally, 27 'other' objects have been identified that do not have site numbers, including 8 vehicles that include a snowmobile, truck, and 6 cars. During the LMNA-7 Project specifically – of the 38 anomalies investigated – MHM and its volunteers confirmed the existence of 7 new wrecks, accumulated important data about 2 known wrecks, 6 new submerged maritime sites, 3 'other' sites/objects, a collection of 5 tree stumps, 2 trees, 5 rocks or rock piles, and 14 false sonar returns comprised of unusual bottom contours.



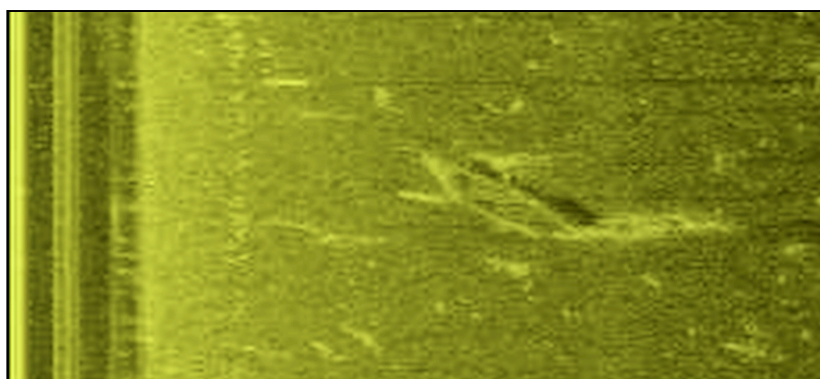
Lake Minnetonka (Lake Minnetonka Conservation District).

Fisherman's Friend Wreck 3 Site (21-HE-499)

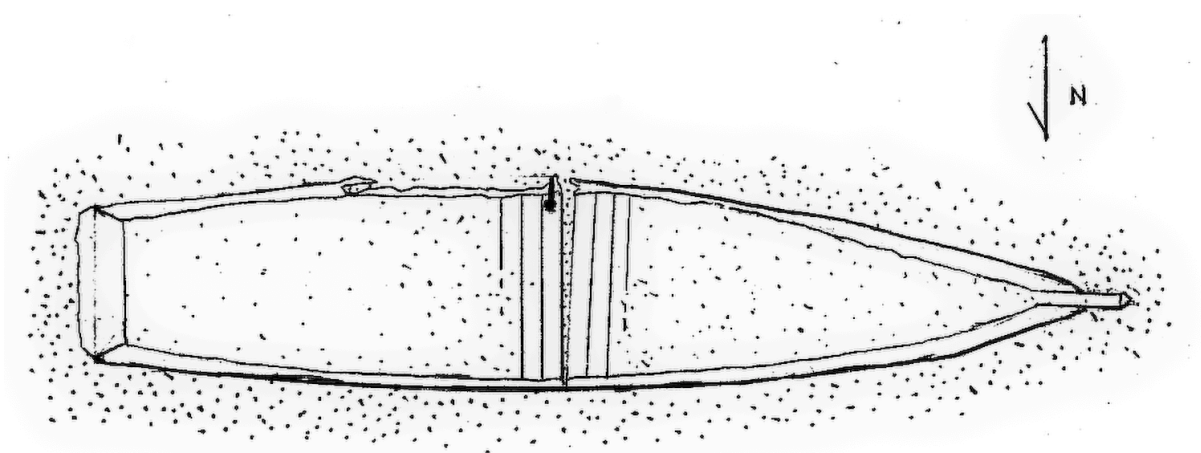
MHM recorded an identifiable sonar image of Anomaly 676 in July 2017; the site was unidentifiable in sonar footage from May 2011. The Fisherman's Friend Wreck 3 derives its name from the model of small wooden rowboat produced by the Ramaley Boat



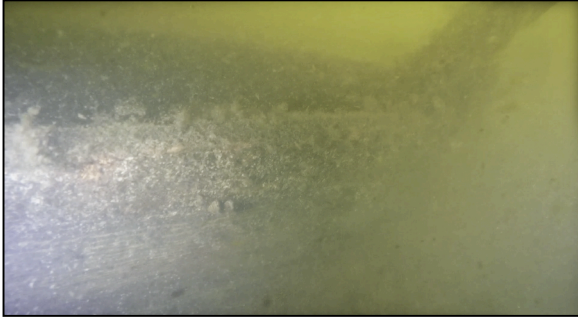
Company in 1913 or later at its Wayzata location (Ramaley purchased Moore Boat Works in 1912 and began production after that boating season). Another possible manufacturer of the boat was Wise Boat Works of Wayzata. The design is simple and the vessel could have been built by an established boat works or an amateur boat-builder. The first Fisherman's Friend Wreck (21-HE-485) is capsized and the Fisherman's Friend Wreck 2 (21-HE-489) is extremely degraded. The Fisherman's Friend Wreck 3 is 13.80 feet long, 2.90 feet wide, with a 1.90-foot depth of hold at the stern. The wreck's bow is pointed and the stempost rises significantly above the rest of the hull because the forward port and starboard strakes and gunwale have not survived. More of the upper hull survives on both sides aft, but the gunwale is missing throughout the wreck. The hull is carvel-built, it has a square transom stern, and a flat athwartships-planked bottom that is a diagnostic attribute for the Fisherman's Friend design. The surviving top strakes are very thin, possibly worn by water erosion; the lack of sediment in the wreck's hull suggests water moves through the area quickly. The Fisherman's Friend Wreck 3 was constructed in the 1890s or early 1900s, and since the average lifespan of a small wooden boat was not extremely long, a site disposition date of 1905-1915 is reasonable. MHM submitted an archaeological site form for the Fisherman's Friend Wreck 2 to the OSA in mid-August 2017 and received her site number at that time.



MHM's sonar image of the Fisherman's Friend Wreck 3 (21-HE-499).



A sketch of the Fisherman's Friend Wreck 3 (21-HE-499, Christopher Olson).



The starboard bow of the Fisherman's Friend Wreck 3 (Mark Slick).

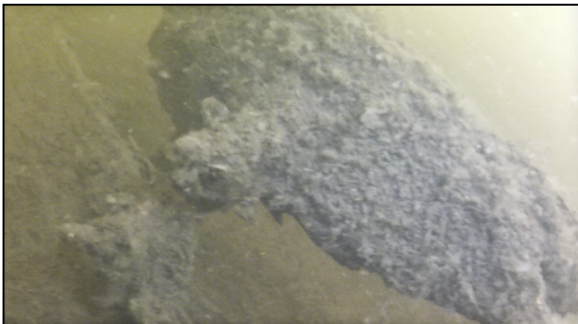


The stempost (Mark Slick).

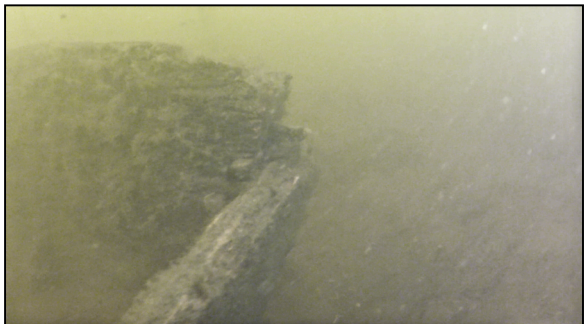


Above: The starboard quarter (Mark Slick).

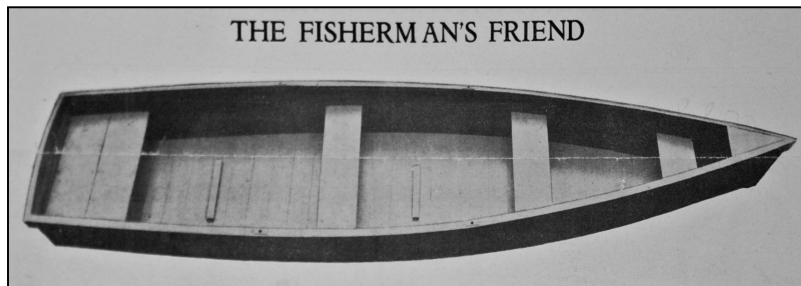
Right: The transom looking off the starboard quarter (Mark Slick).



A metal fastener attaches an eroded frame to a stake on the port side quarter (MHM).



The port quarter and transom stern of the Fisherman's Friend Wreck 3 (MHM).



A Fisherman's Friend by the Ramaley Boat Company (Ramaley Boat Company ~1913).

## Hydroplane Wreck Site (21-HE-501)

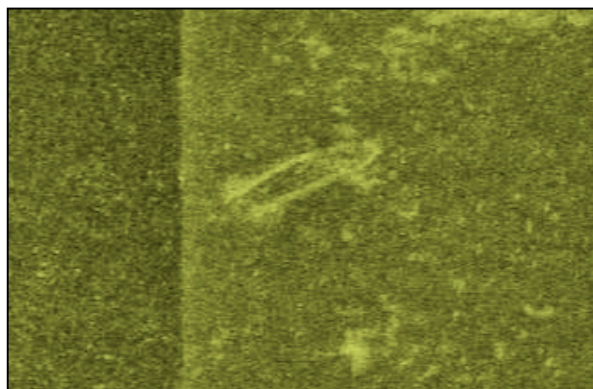
MHM recorded a sonar image of Anomaly 650, the Hydroplane Wreck, during the LMS-2 Project in May 2012. Viable hydroplanes were developed and on display with an outboard engine in Monaco in 1906 – and first raced in April 1907, their “stepped hull bottoms enabled them to skim across the water like a flat stone”. Hydroplane development was dependent on advancements in portable outboard motor design, increasing the availability of the racing boats to a broader audience. Beginning with the French ‘autonautile’ inboard engine with an outboard drive in 1899, by 1906 the first portable and detachable outboard motor was produced in Detroit. Designed by Oliver Barthel and Cameron B. Waterman, 25 of the ‘Waterman Outboard Porto’ motors were sold and in 1907, the duo produced 3,000 outboards with a more advanced design that included a water-cooled cylinder. Further, between 1906-1908 on the Kinnikinnic River near Milwaukee, Ole Evinrude designed, constructed, and tested his detachable row boat motor comprised of a single cylinder made of brass and iron. By 1911, Evinrude partnered with a tug company and backed by that money, soon employed 300 workers and produced thousands of outboard motors (Desmond 2001, 16-18).

The Hydroplane Wreck Site is 15.30 feet long overall, while the hull of the wooden boat is 14.50 feet long, and 4.60 feet in the beam. The pointed bow has a metal casting with a towing loop attached. MHM contends the foredeck was originally comprised of canvas - now gone - but thin athwartships and longitudinal deck beams and stringers survive. The longitudinal foredeck stringers butt up to bulwark that supports a substantial rounded vertical dashboard. The gunwales are intact, with a small rubrail attached. The gunwales camber upward toward the centerline of the hull, and intact quickwork (the layer of wood above the frames/futtocks that is called ceiling planking when located on the bottom of a boat) and riders (frame-like attachments to the quickwork) extend above the silt to the gunwale. The transom stern is designed for an outboard motor and is especially low when compared to other types of outboard or utility boats. The transom cambers upward from port and starboard and drops down in the center; at this spot the outboard was attached to the motor board. Two round clamp screw marks scar the motor board on the inner transom, indicating the precise placement of the outboard motor. The wreck has tail fins, vertical wooden planks that increase vessel stability at high speeds; tail fins are also known as air rudders. The tail fins are rounded on their outside face, flat on their inner surface, are rectangular, and are 2.40 feet long. They are fitted into the inner gunwales at the port and starboard quarters and extend over the transom’s edge by 9.60 inches. Metal brackets on both tail fins and 2 brackets attached to the inside of the transom on port and starboard secured the outboard motor and were part of the steering gear.

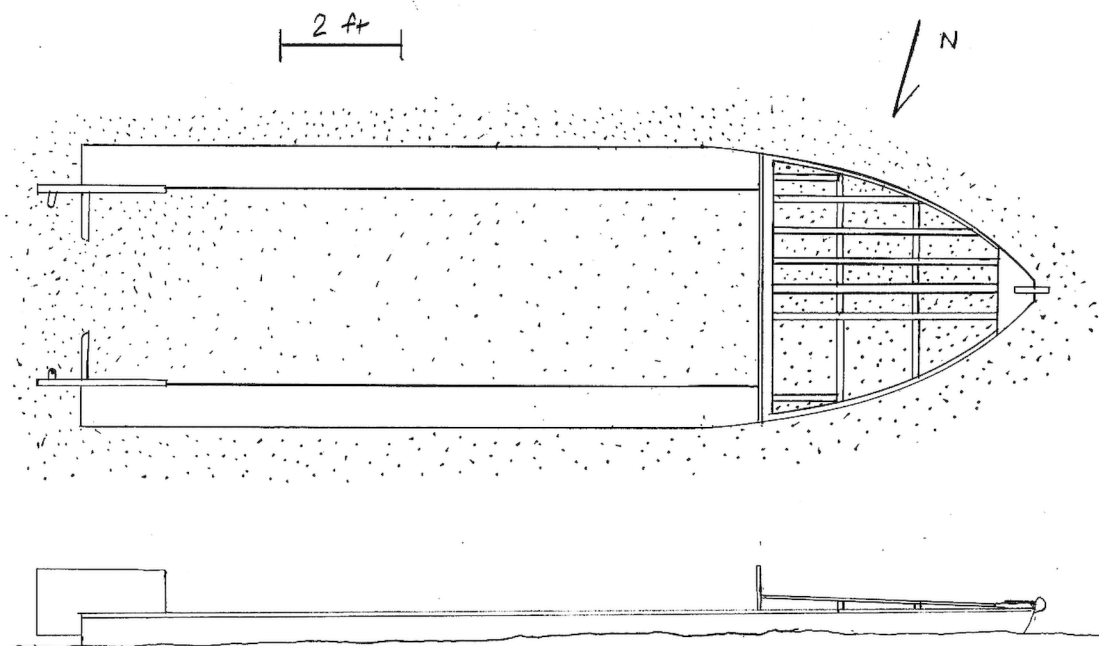
The Hydroplane Wreck is held together with slot headed wood screws and wire nails. The wreck has thin metal sheathing along the entire hull above the waterline and extending onto the hull’s flat bottom; the tail fins are partially sheathed in metal. The tail fins, combined with the wreck’s all-over cambered design, low freeboard, canvas deck, and flat bottom distinguish it as a hydroplane. A possible manufacturer of the Hydroplane Wreck was Ramaley Boat Company of Wayzata; in August 1919, Herb



Nelson and Sanford Anderson were using 'Ramaley's No. 13 Hydroplane' to entertain a crowd during the evenings. It was noted that the boat "barely touches the surface" (*Hennepin County Herald* 1919). Based on the design and construction of the Hydroplane Wreck, MHM contends the boat was constructed in the early 1910s into the 1920s, and a site disposition date of 1940 or earlier is reasonable. The hull has a 1.80-foot depth of hold that contains 9.60 inches of silt build-up. This amount of silt indicates that sediment drops out of the water column rather slowly and disturbed silt clears quickly, as experienced during the fieldwork. MHM submitted an archaeological site form for the Hydroplane Wreck to the OSA in mid-August 2017 and received her site number, 21-HE-501, at that time.



MHM's sonar image of the Hydroplane Wreck (21-HE-501).



A plan and side view sketch of the Hydroplane Wreck (21-HE-501, Christopher Olson).



The bow of the Hydroplane Wreck looking from the starboard side (Kelly Nehowig).



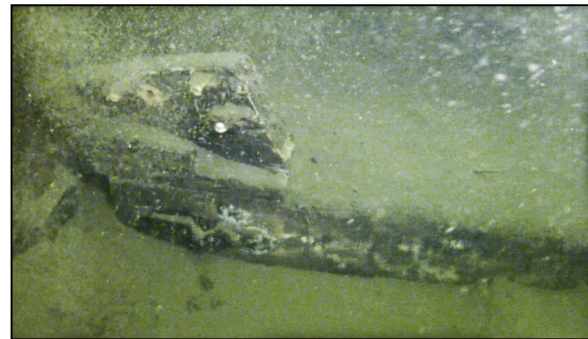
The dashboard of the Hydroplane Wreck looking toward the bow (Kelly Nehowig).



Right and Above: These port quarter views of the Hydroplane Wreck show how the stabilizers wedge into the gunwale. Note the metal sheathing on the outer hull (Kelly Nehowig).

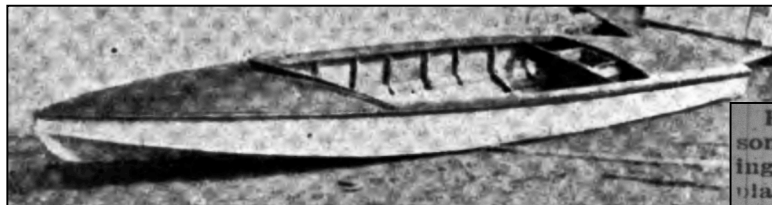


The inner surface of the port side tail fin (Kelly Nehowig).



The inner starboard transom (MHM).





Above: This un-stepped hydroplane constructed by the Joseph Dingle Boat Works in St. Paul in 1916 is similar to the Hydroplane Wreck, with the exception of the stern (*Open Exhaust* 1917, 22).

Below: A Ramaley Boat Company ad listing hydroplanes as a vessel choice for purchase (*Hennepin County Herald* 1919).

Below: News of Ramaley's No. 13 hydroplane (*Hennepin County Herald* 1919).

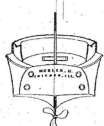
Herbert Nelson and Sanford Anderson are going some these days. Doing stunts in Ramaley's No. 13 hydroplane these young men have attracted a crowd of spectators every evening. This speedy boat fairly leaps and bounds over the water, barely touching the surface. "Hub" and Sanford have her under perfect control and it is a sight to see them come across the lake.

## Ramaley Boat Company

DESIGNERS AND BUILDERS

Cruisers, Runabouts, Hydroplanes, Sail Boats, Row Boats, Canoes, and Second Hand Boats

Superior Quality--Perfect Construction



Columbia Batteries, Exide Starting and Light Batteries, Evinrude Motors, Expert Auto Repairing, Red Crown Gasoline

Below: This Curtis De Luxe outboard hydroplane suggests how the Hydroplane Wreck would be operated, using a tiller (*Outboard Motor Boating* 1928a, 145).

Below: Early Evinrude outboard motors with tillers were featured in hydroplane races (*Outboard Motor Boating* 1928b, 165).

**OAK SACRAMENTO CALIFORNIA RETURN ~ Mar. 10, 1928**

"Blue Diamond", winner of Green Trophy, most prized of all victory cups of the 1928 Spring Florida Racing Season.

**EVINRUDE**

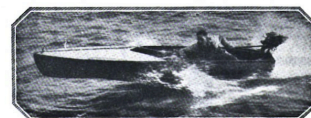
EVINRUDE FACTORY BRANCHES--SALES and SERVICE:

512 Second Ave., S. Minneapolis, Minn.  
128 W. Bay St., Jacksonville, Fla.  
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25 Atlantic Ave., Boston, Mass.  
117-119 Broadway, Oakland, Calif.

124 Second St., Portland, Ore.  
79 Columbia St., Seattle, Wash.  
534 E. Jefferson Ave., Detroit, Mich.  
St. W. Toronto, Ont., Canada

### The Curtis De Luxe 13-Foot Outboard Hydroplane for Those Who Care

SPECIFICATIONS  
Length—13'9" Beam—46" Keel—1" x 2"  
Frames—Seven Spruce Frames, 1/4" x 2"  
Planking—Mahogany, 1/16" Thickness  
Transom—Mahogany  
Deck—Canvas Covered  
Fastenings—Brass Screws and Bolts  
Finish—Varnished  
GAS ENGINE & BOAT CORP., NORFOLK, VA.



Won at Baltimore—World's Record  
Savannah, Ga.  
Norfolk, Va.  
Virginia Beach

### Prigg SKIMMER The Indestructible Outboard Hydroplane

**\$85**

L. A. K. Battery of Tacoma model, Dues Fish. Weight, 120 lbs. Racing model of Dunderberg, 88 lbs. Weight, 4 lbs.



### Only Three More Days-- TO GET THAT BARGAIN IN A MOTOR BOAT

There are still some dandies left! Many people who had intended waiting until next year to buy a boat, could not resist the tempting prices we are offering. Come out to Wayzata Saturday or Sunday and inspect these remarkable values for yourself.

		Was	Now
Dodge	21-foot, 8 cyl.	\$2408	\$1950
De Wite	19-foot, 6 cyl.	1900	1675
Cruiserette	20-foot	1200	900
Specially designed Cruiser	18-ft.	1400	750
Runabout	30-foot	400	215
Outboard Hull	18-foot 1 left	450	230
Stepper, only 2 left	14-foot	210	175
Stepper	16-foot	125	65
Sea Sled		300	150
Mullins		250	120
Runabout	17-foot	40	20
Row-boat	14-foot		

Several good used Outboard Motors left

Don't deny yourself the pleasure of boating. At these prices you can afford to own a splendid boat. Keep cool on the waters of Minnetonka.

**Minnetonka Boat Works, Inc.**  
Wayzata, Minn. Phone Wayzata 305

Left: Stepped hydroplanes for sale in Wayzata (*Minnetonka Herald* 1931).

Above: The Skimmer, an Indestructible Outboard Hydroplane by Prigg (*Motor Boating Magazine* 1928, 159).

**This is the New Model SILVER-STREAK De Luxe Outboard**

For Racing and Sporting—All Mahogany

RACING STEP-HYDRO.....14' long x 50" wide. Speeds, 18-40 Miles per Hour.  
ALL PURPOSE RUNABOUT.....16' long x 50" wide. Speeds, 15-35 Miles per Hour.  
A Lasting Investment in Pleasure—Send for Literature.

LA CROSSE ISLE LA PLUME BOAT WORKS WISCONSIN

Above: A runabout-style hydroplane (*Outboard Motor Boating* 1928b, 145).

Below: A runabout-style stepped hydroplane (*Motor Boating Magazine* 1928, 159).

**THE HOOTON PLANE SAFETY.**

**SAFETY - PLANE**

**A Husky Racer-Runabout for the New High-Powered Motors**

THRILLS: At forty miles and more per hour! The SAFETY-PLANE will handle the big motors, and does not need to be oversteered and over-weight to do it. Exclusive protected features in design of underbody and its enable this husky hull to steer and take the waves perfectly at the highest speeds.

As a runabout it will carry four men comfortably at 27 miles an hour with the 1928 Class C motors. For racing with Class A, B, and C motors, the model "R," developed from our world's champion "BOB SLED," is now available. Write for literature.

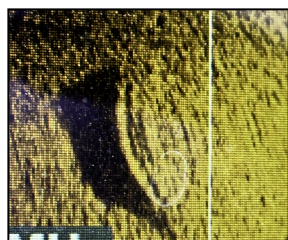
**GORDON B. HOOTON, 505 Grandville Avenue, Grand Rapids, Mich.**



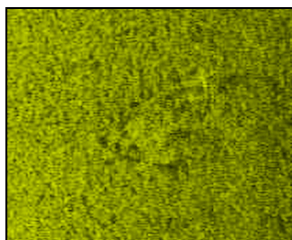
## Hydroplane Wreck 2 Site (21-HE-502)

MHM recorded a sonar image of Anomaly 691, the Hydroplane Wreck 2, during the LMS-2 Project in May 2012. The sonar image was ambiguous and MHM re-scanned the wreck in July 2017 at the urging of MHM friend and supporter Mike Brill. Brill's sonar image of the anomaly surpasses MHM's recording, showing more detail. The Hydroplane Wreck 2 is 13.00 feet long overall and 3.50 feet in the beam; the depth of hold cannot be determined because the port and starboard hull and gunwale of the wooden wreck have not survived. The pointed bow is comprised of the stempost (with an attached towing ring and small piece of rope line) and a portion of the port and starboard gunwale, along with a deck stringer; the foredeck beams, stringers, and decking have not survived. MHM contends the foredeck was cambered because of the upward angle of the deck stringer, aligning the wreck with historical inboard and outboard hydroplane drag boats. The transom stern is designed for an outboard motor with a raised squared-off motor board. The port and starboard sides angle downward from the motor board and lead to vertical quarters; a portion of the starboard quarter is detached from the hull and lying upside down in the gravel next to the wreck. A stern extension is visible above the silt; it is comprised of two flat beams with a space between them to accept the outboard motor's lower unit. The extension increases the wreck's length at the water line (LWL), thus allowing the small boat to handle more like a larger vessel without adding too much weight to the hull. The increased LWL would have made the boat easier to plane. The keel is complete and visible protruding through the hull with two stringers running parallel on both port and starboard. Three stern knees accompany the keel and both stringers. A few floors are seen both forward and aft, and a small portion the quickwork – in the form of plywood – survives amidships port.

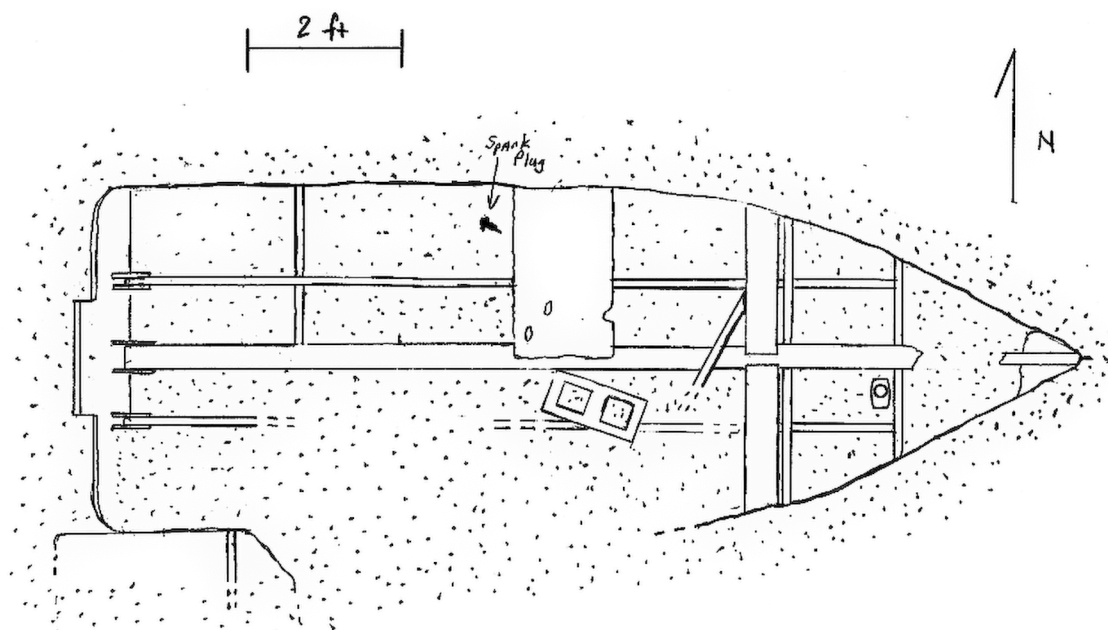
The vessel is held together with slot-headed woodscrews and wire nails, not Phillips head screws. This attribute indicates the boat was constructed prior to the mid-1930s. An invasive Champion J-4J spark plug was found lying on the port side of the wreck; the plug is the marine type that is used in outboard motors, but it is not contemporary with the wreck. A concrete block on the wreck's starboard side indicates the Hydroplane Wreck 2 was scuttled intentionally. Based on the design and construction of the Hydroplane Wreck 2, MHM contends the boat was constructed in the 1920s and a site disposition date of 1940 or earlier is reasonable. The wreck lies in silty gravel, and the small amount of silt build-up on the site indicates that sediment drops out of the water column rather slowly and disturbed silt clears quickly, as experienced during the fieldwork. MHM submitted an archaeological site form for the Hydroplane Wreck 2 to the OSA in mid-September 2017 and received her site number, 21-HE-502, at that time.



A sonar image of the Hydroplane Wreck 2 (Mike Brill).



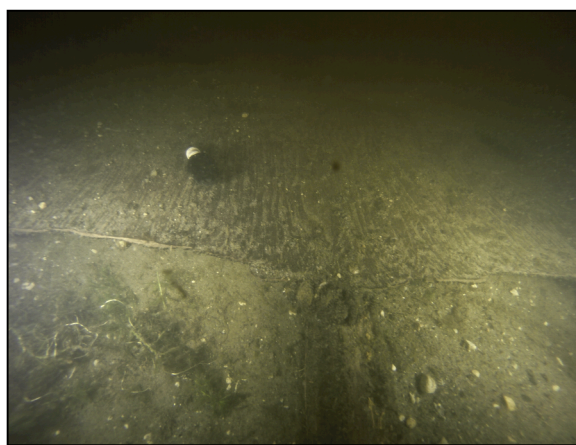
An enhanced sonar image of the Hydroplane Wreck 2 (MHM).



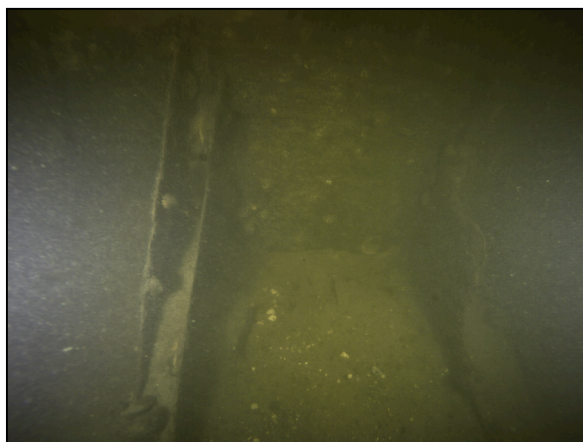
A sketch of the Hydroplane Wreck 2 (21-HE-502, Christopher Olson).



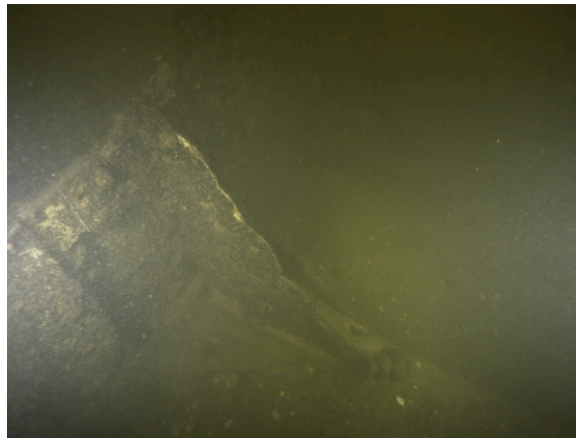
The remains of the Hydroplane Wreck 2's bow and centerline stringer (Mark Slick).



The plywood quickwork lying on the stringers and floors in the bottom of the wreck (Mark Slick).

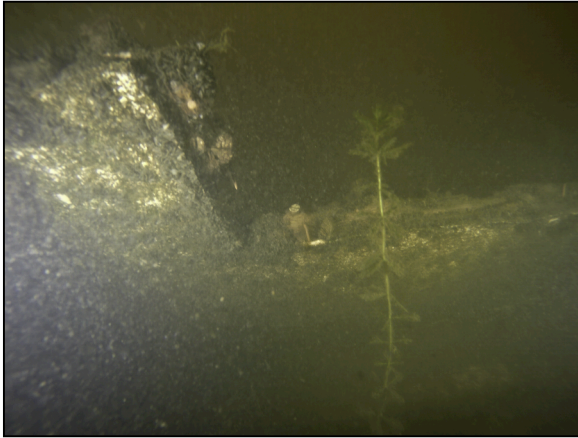


Stern knees (Mark Slick).

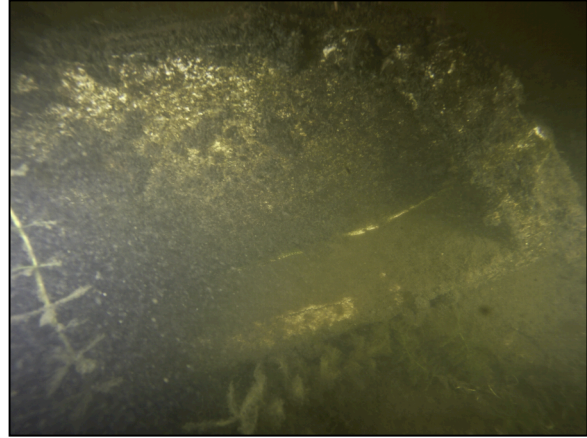


Stern knee (Mark Slick).

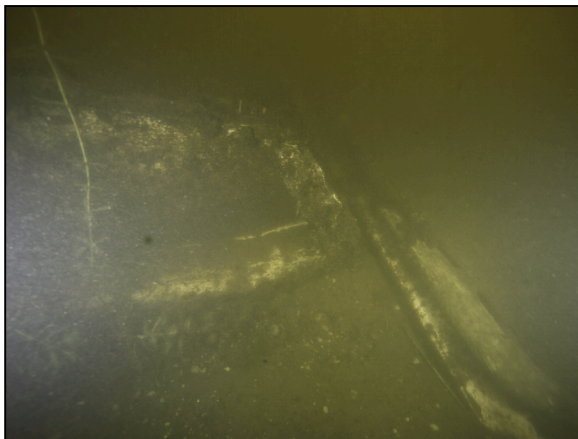




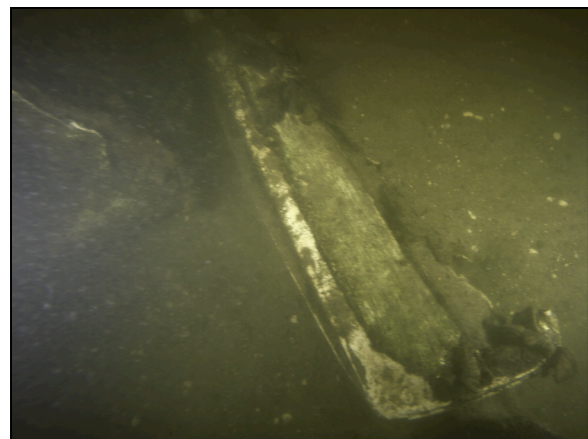
The raised motor board and starboard transom (Mark Slick).



The starboard side transom and stern extension (Mark Slick).



The starboard transom, stern extension, and dislodged gunwale piece (Mark Slick).



The dislodged starboard quarter gunwale and hull piece (Mark Slick).

## MOTOR BOAT RACES PROMISE THRILLS SUNDAY

**MINNETONKA  
BOAT RACE SPECIAL**

**Roast Chicken Dinner 50c**

**HART'S CAFE**  
Wayzata

Welcome to the Boat Races

When in Wayzata Visit the

**Minnetonka Diner**  
(Under New Management)

**KELLY and ALICE**

**NEVER MIND LUNCH**  
*Let's Watch the Boat Races*

And almost without exception every manufacturer of inboard and outboard motors and marine engines specifically recommends MOBILOL for best performance.

You too, can have that best performance in your car by having MOBILOL put in the crankcase.

MOBILGAS, MOBILOL, and MOBIL SPECIAL-TIES help to make your motoring safer, more enjoyable, and more economical.

**THE BOULEVARD STATION**  
Horace Falkenstein      Wayzata, Minnesota

**Welcome--**  
to the  
**Boat Races**

COME IN AND SEE OUR  
**UNUSUALLY FINE  
USED CAR LINE**

'23, '24, '25, '26 Chevrolets  
'24, '25, '26 Fords

**Wayzata  
Motor Co.**  
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**Sunday's Program**

**CLASS "A" RACE**—17 to 19 feet—2:30 P. M.—3 miles—Entries—Tucky Halliwell, Mather Garland, Dick Helarich, Harry Botney, Cliff Pond, Willard Addy, Dick Garlock, C. L. Holt.

**II.**  
**COSTUME SURF BOARD PARADE**

**III.**  
**CLASS "B" RACE**—utility boats—3:00 P. M.—3 miles—Entries—J. Fred McCarthy, G. E. Potters, Art Hein, Sheldon Brooks.

**IV.**  
**"EAT-AND RACE" CONTEST**

**V.**  
**CLASS "C" RACE**—20 to 25 feet—3:30 P. M.—3 miles—Entries—W. E. Tilling, Dr. C. E. Hermann, Donald Womert, Gene Finch, E. V. Stevenson, Jack Armstrong, Walter Taylor.

**VI.**  
**BALL PASSING RELAY**

**VII.**  
**CLASS "D" RACE**—Cruisers—4:00 P. M.—2 miles—Entries—Emory Pomeroy, E. A. Schfamp, Louis Gilch, Charlie Ingraham, H. W. Ward, E. S. Elwell, Carl Gage, E. A. Roberts.

**VIII.**  
**SPINS AND TRICKS**

**IX.**  
**CLASS "E" RACE**—4:30 P. M.—3 miles—Entries—Frank Griswold, D. D. Davis, Harley Fry, Geng Hamaley.

**X.**  
**BALLOON BREAKING**

**XI.**  
**FREE-FOR-ALL**—5:00 P. M.—Open to all boats.

**XII.**  
**SURF BOARD RIDING** behind Dr. Young's amphibian by Garland.

**XIII.**  
**SPECIAL RACE**—Griswold in speed boat and Young in amphibian from a standing start.

**ALL AFTERNOON:** Watertown High School Band.

August 1938 boat races on Lake Minnetonka included hydroplanes and provided commercial opportunities for local merchants as well as entertainment (Minnetonka Herald 1938a-b).

**Forty Entries Expected For  
Minnetonka Motor Boat Races**



# 25,000 In Wayzata Sunday To Watch Tonka Boat Races



1938 and 1939 headlines describing Lake Minnetonka boat races and Minnesota outboard hydroplane racing in 1940 with boats similar to Hydroplane Wreck 2 (*Minnetonka Herald* 1938c, 1939.8.10; MNHS GV3.61Pp2, GV3.61Pp33, digitized by MHM).

## Thrills, Excitement, Comedy As 25,000 Watch Wayzata's Annual Boat Races



Left: Hydroplane races also took place at Pelican Lake in Orr in 1950 (MNHS GV3.61Pp22, digitized by MHM).



Left and Above: 1954 Minneapolis Aquatennial hydroplane races (MNHS MH5.9MP9.1, MH5.9MP9.11954r3, digitized by MHM).



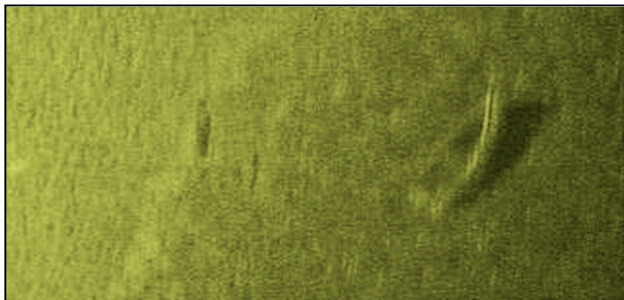
Stepped hydroplane *Spitfire* (left and above) designed and constructed by Paul Larson of Larson Boat Works of Little Falls. Hydroplane *Tommy* (right). Both outboard hydroplanes are similar to Hydroplane Wreck 2 with the exception of the steering gear (ladyben.com, pinterest.com).



## Wooden Motor Boat Wreck 2 Site (21-HE-500)

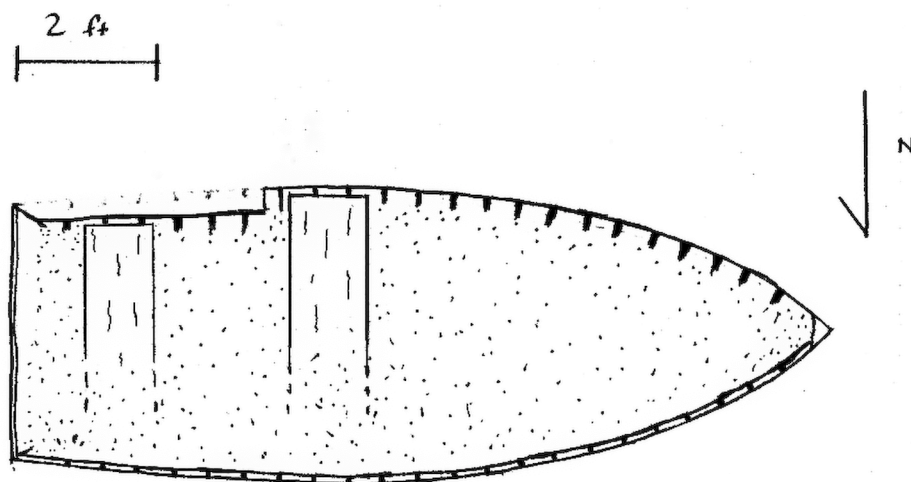
MHM recorded a sonar image of the Wooden Motor Boat Wreck 2 (Anomaly 654) during the LMS-2 Project in May 2012 and in early July 2017 identified the site. The Wooden Motor Boat Wreck is 11.50 feet long and 4.10 feet in the beam. She is carvel-built with intact gunwales with the exception of the port side quarter, where 3 strakes and the gunwale are missing. Further, the port side gunwale-level stringer is missing, but the gunwale is complete on the starboard side. The wreck has a pointed bow and intact stempost with a towing ring attached to it. A wooden bow cap covers the stempost end. The square transom, narrow frames are extant throughout the hull, and a stringer runs longitudinally along the inner hull on both sides; 2 surviving benches rest on the stringer amidships and aft. A short wooden plank with a metal frame and backing attached to the inside of the hull reinforced the transom stern and strengthened the vessel where it carried a motor. The transom is half-mortised into the stern quarters (although the port side only partially survives) and the resulting construction sets the transom slightly forward from the end of the wreck. This somewhat crude attribute, put together without supporting gunwale-level knees or supports, is weaker than end-on attachment of the hull sides to the transom – a more sophisticated and stronger design. MHM suspects the wreck had 2 more bench seats that are no longer extant.

The hull was painted green above a large white splash rail, and black below the waterline. The transom was painted entirely green. The wreck does not carry any oarlocks; the boat may have not been outfitted with them, but that seems unlikely. Therefore, they may have been salvaged prior to the boat's scuttling. The wreck is held together with slot-headed woodscrews and nails, suggesting she was constructed prior to the mid-1930s, when Phillips head screws became widely used. The wreck has no registration number, indicating she sank prior to July 1, 1959. Considering the watercraft's condition – she was probably used for several years on the lake, maintained and re-painted several times – MHM suggests a sinking date around 1945. For comparison, the Wooden Motor Boat Wreck (Anomaly 467) identified during the LMNA-4 Project is of similar size and construction, but was built in 1960. This time-tested small wooden boat design was use on Lake Minnetonka for several decades in the middle 20<sup>th</sup> Century. Sediment build-up of 8.4 inches in the hull supports this date since water seems to move through this area rather quickly; a near-by wreck that sank in 1993 has a few inches of silt inside her hull. MHM submitted an archaeological site form for the Wooden Motor Boat Wreck 2 to the OSA in mid-August 2017 and received her site number, 21-HE-500, at that time.



MHM's sonar image of the Wooden Motor Boat Wreck 2 (21-HE-500).





A sketch of the Wooden Motor Boat Wreck 2 (21-HE-500, Christopher Olson).



The bow of the Wooden Motor Boat Wreck 2 (Kelly Nehwoig).



The large splash rail and green paint at the wreck's starboard bow (Kelly Nehowig).

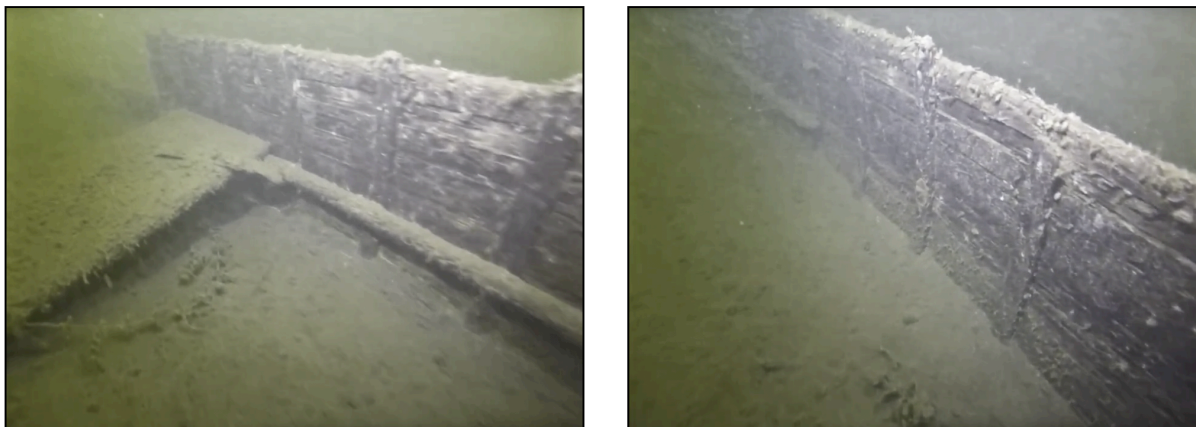


Starboard quarter and transom (Kelly Nehowig).



Motor board inside the transom (Kelly Nehowig).





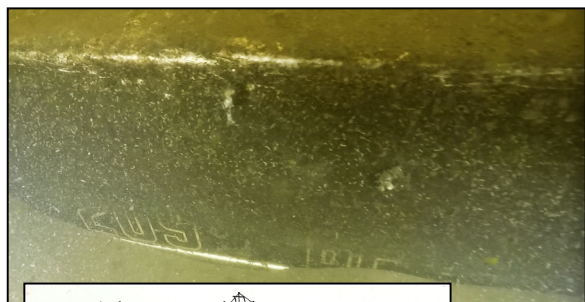
The inner hull on the port side showing the damaged gunwale aft, bench seat, the supporting stringer, thin slat construction, and futtocks (Kelly Nehowig).

### Update: Herter's Model Hudson Bay Wreck (Anomaly 601)

MHM recorded a sonar image of Anomaly 601 during the LMS-2 Project in May 2012. In mid-July 2016 it was thought that the anomaly was an aluminum wreck. In early August 2016, MHM investigated the anomaly more thoroughly; both visits to the site were conducted in zero visibility conditions. MHM volunteer Mark Slick likened diving on the wreck to "peering through dirty milk". Using a 'Brody Bag'<sup>1</sup>, MHM's Olson was able to determine a partial registration number on the wreck's starboard bow: MN 209\_ BE with the fourth number missing. The 'BE' span of licenses was issued in 1962-1964 through a variety of bait and sporting goods shops and the Minnesota Department of Conservation; it indicates the boat was registered in Minnesota between those years. MHM contacted the DNR and in the series of numbers 2090-2099, only 3 were present in the surviving registration records from 1972 forward: a 12-foot homemade wooden boat from 1955, a 12-foot Larson from 1920, and a 1960 14-foot Herter's boat (John Nordby, personal communication, September 2016). Of these 3 choices, only the Herter's - a brand made in Waseca, MN - could be Anomaly 601. In mid-June 2017, MHM returned to Anomaly 601 with the hope that the visibility would be better than the previous year. With improved visibility, MHM was able to confirm the Herter's brand identification because the company's logo could be seen on the port and starboard quarters. Therefore, the wreck's registration number is MN 5099 BE and its last registration expired in December 1972 (John Nordby, personal communication, July 2017). The logo's design is comprised of the name *HERTER'S* in light blue capital letters with the company's 'coat of arms' or crest emblem behind the name. The crest is comprised of a rearing deer, seahorse, cross, crossed flintlocks, fish hooks, and duck, topped with a fish and full-rigged sailing ship with the name 'HERTER'S' below, all on a police-style shield.

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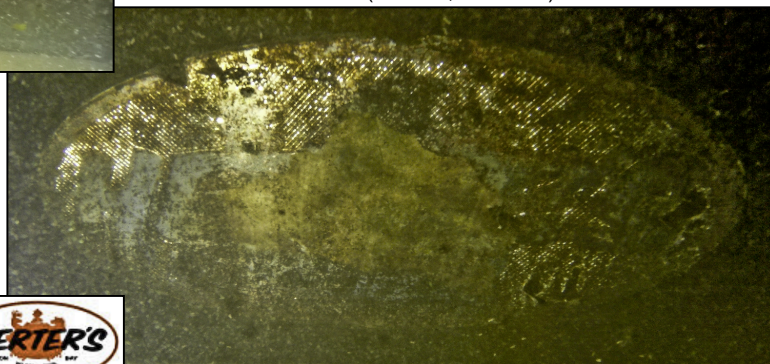
<sup>1</sup>A Brody Bag is a clear plastic bag filled with fresh clean water. When first developed by Steve Brody, at that time a staff member of East Carolina University's Dive Safety Office, a glow stick inside the bag would light up the clear water. In MHM's experience, a strong dive light shone through the water while the diver presses their facemask against the bag, is effective.



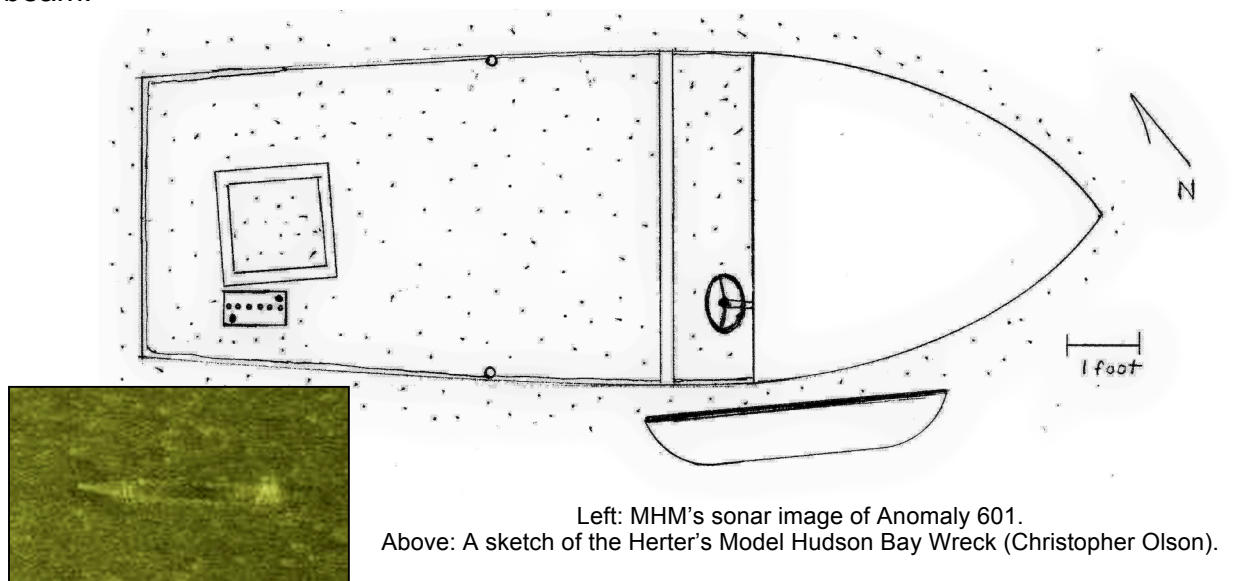
Left: The port side bow of the Herter's Model Hudson Bay Wreck showing the Minnesota registration number MN 2099 BE (Mark Slick).

Below: A round Herter's logo on the starboard quarter of the wreck (Mark Slick). The insert shows the style of the logo.

Below Left: Herter's crest (Herter's, Inc. 1961)



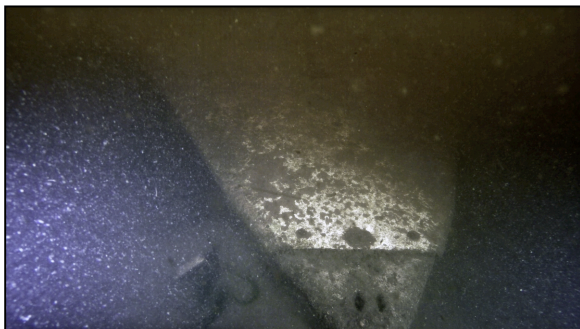
Anomaly 601 has a cambered aluminum foredeck that is grooved to accept the windshield, it has evidence of a missing bow casting, intact gunwales with an aluminum caprail, 2 oarlocks are located amidships on both the port and starboard sides, and frames are located on the inner hull. There is a bench seat with a canvas-covered back, a steering wheel with 2 spokes and a center button, a dashboard with an ignition on a square plate, and the windshield is lying in the silt next to the wreck's starboard bow. The transom stern is designed to carry an outboard motor that is now missing and the stern quarters have aluminum castings with handles for easier transport. A mast light, probably a retractable model, rests in the handle of the starboard quarter casting. The remnants of a bench seat support is located just forward of the transom. An 'Atlas' brand battery (produced in Canada) is located in the starboard quarter, and a concrete block is located amidships aft. The wreck is 14.00 feet long and 55.00 inches in the beam.



Left: MHM's sonar image of Anomaly 601.

Above: A sketch of the Herter's Model Hudson Bay Wreck (Christopher Olson).





Above: The aluminum foredeck showing the marks where a large bow casting was located. Right: The steering wheel is still attached to the wooden dashboard under the foredeck (Mark Slick).



Above: The dashboard. Right: The starboard quarter and mast light wedged into the corner casting handle (Mark Slick).



George Herter established Herter's, Inc., in 1937 in Waseca. Growing during the 1940s, Herter's manufactured and sold a variety of hunting equipment (including firearms and ammunition), fishing tackle, decoys, other types of sporting goods, and eventually boats – by mail order catalog. The company opened 7 brick and mortar stores<sup>2</sup>, but over the decades the company was primarily known for its mail order business and quirky catalogs, written by George Herter with his “Barnum-esque” language. This habit is reflected in the description of “Herter's Aircraft Division, Inc. – World's largest suppliers of aircraft, air missile and air target liquid glass resins”. Also, Herter proudly claimed many of his products had earned the endorsement of the ‘North Star Guides Association’ – an organization that was a figment of his imagination. Further, Herter's catalogs and several custom-casted metal products claimed the company was established in 1893 – the year his father Edward O. Herter founded his store in Waseca – and not in 1937. Regardless of fantastic claims, it is fact that a Waseca company's production of 400,000-500,000 Herter's catalogs per order made it one of the busiest US commercial printing firms. Herter's other publications considered a variety of topics,

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<sup>2</sup>The stores were located in Waseca and Glenwood, MN, Mitchell, SD, Beaver Dam, WI, Iowa City and Iowa Falls, IA, and in Olympia, WA.

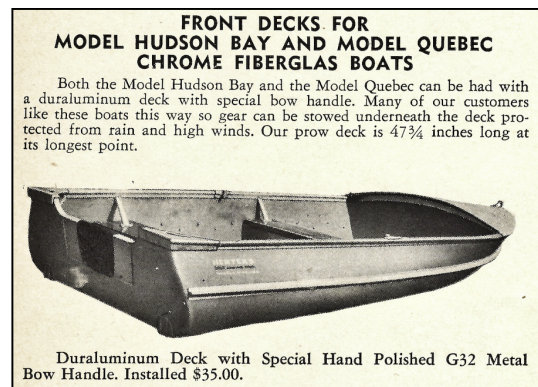


including a recipe book that had 15 editions and Hitler's omelet recipe, he claimed. Herter's has been characterized as "the Sears, Roebuck of the outdoor industry...[and] was the inspiration for today's huge mail order and big-box outdoor retailers". This moniker is helpful to place Herter's in an historical context as an innovator in American commerce. However, over-extension and other circumstances pushed the company into bankruptcy in 1977. Cabela's acquired the Herter's brand and it still embosses certain products (Collins 2008; Copyright Office 1957, 1118; Smith 2015).

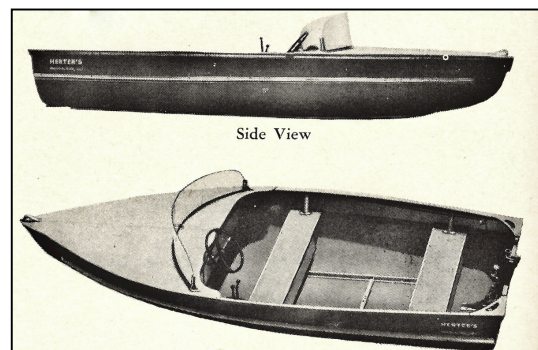
By 1949 the company sold boat-making supplies, including "Herter's *Famous Blue Prints*" for several types of wooden fishing and hunting boats. Further, by 1951 the company sold and advertised "new life for old boats", promoting the sale and use of fiberglass fabric and resin to preserve and protect wooden hulls. Herter's further touted their fiberglass application process with claims that their "Fiberglas has 5 times the tensile strength of steel...will stop a bullet, is rotproof, wormproof, corrosionproof, non-deteriorating, permanently colored if desired". Other watercraft-related supplies in Herter's catalogs include their "Famous Dull Duck Boat Paint", "Famous Concentrated Marine Boat Cement and Crack Repairer", marine glue, and canvas waterproofer, filler, and shrinker, fiberglass hull patching kits, metal safety boat stabilizers, metal oarlocks, wooden oars and copper oar tips. By 1954, Herter's promotion of their chrome fiberglass cloth and liquid glass led to the production of their own line of watercraft – using wood or chrome fiberglass to construct the hulls (Herter's Inc. 1949, 74-77, 1951, 37-43, 1954, 88; *Motor Boating Magazine* 1952a, 120-121, 1952b, 104, 1954, 379).



Above: An insert inside a 1954 Herter's catalog announcing the availability of constructed chrome fiberglass boats (Herter's, Inc. 1949).



Anomaly 601 is a 1960 version of the 1957 decked Model Hudson Bay (above) and resembles the 1957 Mark III below (Herter's, Inc. 1957, 182).



In 1956 Herter's published a detailed account of their chrome fiberglass process that plated spun fiberglass with chrome. Herter's produced fiberglass by melting glass marbles, subjecting the liquid glass to air blowers to form the melted glass into filaments that were wound around a drum, and then the fibers were brought together into one thread and collected onto spools. The spools were heated to remove starch and at this point, the glass fibers were coated with chrome that "gives the glass fibers a permanent coat which tends to shed moisture and most important of all makes the Resinote<sup>3</sup> when applied stick tightly to the glass. Herter's evidence that chrome fiberglass boats were made from "the one material from which the best boats are being built" was the acceptance by the US Navy, Army, Air Force, and Marine Corps to utilize the material to manufacture boats, combat helmets, flak jackets, and Infantry combat armor. A Navy report stated that chrome fiberglass "saturated with plastic resins simply cannot leak. The only water that can come in, is spray or rain...the chrome glass fiber laminated hull will not stretch, swell, shrink, or otherwise change its shape or increase in weight, nor will it oxidize (rust)". Further, the Navy determined that the smooth hulls increased a boat's speed and the lack of fasteners – wood screws – enhanced the hull's strength. Two test boats, one partially buried on a beach for 1 year and other left to soak in water – and ice during the winter – for 2 years, experienced no changes. Herter's sold chrome fiberglass boat covering kits through the specialized catalog – along with wood and chrome fiberglass boats. This addition to the company's manufacturing enterprise was reflected in their 1957 business listing: "Herter's Inc., George L. Herter, fishing tackle, gunstocks, fly tying equipment, shotgun chokes & ventilated ribs, reloading equipment and components, decoys, game calls, fiberglass boats & boat coverings, marine hardware" (Herter's Inc. 1956, 3-4; Research Division 1949, 204, 1952, 68, 1955, 65, 1957, 61).

In 1956 the company offered 5 open hull chrome fiberglass outboard motor boat models: Canada (12 foot), Hudson Bay (14 foot), Manitoba (14 foot), St. Lawrence (16 foot), and Quebec (16 foot). Herter's also offered the hulls of the Canada, Hudson Bay, and Quebec models without the aluminum benches, gunwales, stringers, and other fittings, intended for customers who preferred to customize their boats, or use them as molds to create their own fiberglass vessels. Models Hudson Bay and Quebec could be ordered with a 'duraluminum'<sup>4</sup> foredeck and lifting handle and/or an amidships deck for an additional charge. Models Manitoba and St. Lawrence have deeper hulls and are wider in the beam than the Canada, Hudson Bay, and Quebec models. The open hulled chrome fiberglass models had duraluminum fittings, including hollow keels, benches, stringers, and extruded duraluminum gunwales. All 5 models could be painted tanager red, jet black, or marine green for an additional cost – otherwise the chrome fiberglass hulls were delivered in their post-product ion translucent state (Herter's Inc. 1956, 23-29).

Also in 1956, limited numbers of Herter's outboard runabout models Mark III (14 foot) and Mark IX (16 foot) were offered for sale. These chrome fiberglass boats had foredecks, steering wheels, and 2 cockpits. Herter compared their sportier boat, the

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<sup>3</sup>Resinote is Herter's own brand of resin used to manufacture fiberglass boats.

<sup>4</sup>Duraluminum was a trade name for an early form of aluminum alloy.



"Duofoil World Famous Flying Fish Runabout", to a spaceship with its chrome fiberglass hull, duraluminum fittings, and port and starboard fins. Double-ended and square stern canoes, as well as duck and goose boats, rounded out the 10 models of chrome fiberglass watercraft offered for sale in 1956 (Herter's Inc. 1956, 25-26).



**CHROME FIBERGLAS CLOTH  
and LIQUID GLASS**  
for BOAT COVERING and MAKING

**BUY DIRECT AT WHOLESALE PRICES!**

**GUARANTEED LOWEST PRICES.  
WORLD'S LARGEST SUPPLIERS.  
WRITE TODAY FOR HUGE  
NEW CATALOG NO. ANK**

**HERTER'S** MANUFACTURERS, CHEMISTS *Since 1893* Waseca, Minnesota

A series Herter's advertisements promoting boats and boat maintenance products. The boat graphic to the right is a Model Hudson Bay (Motor Boat Magazine 1952, Motorboating 1954, 379, Popular Science 1957, 85).

wyolist.com, fiberglassics.com, merrillsauction.com, Waseca County Historical Society



Examples of  
Herter's Model  
Hudson Bay  
Boats

1954

1957

**HERTER'S FIBERGLAS PROCESSES  
FOR BOAT REPAIR AND NEW BOAT BUILDING**

- Herter Fibreglas processes are the only Fiber-glas processes *unconditionally guaranteed*.
- Herter Fibreglas processes are the only Fiber-glas processes that use resinote, the German formula liquid glass.
- Reliable. Used by the Army, Navy, and Air Corps.
- *Guaranteed* lowest in cost, cover 14 ft. boat for less than \$30.00.

Give your boat, or deck a permanent, all weather surface in four hours or less. Easy to apply. By eliminating upkeep pays for itself in 2 to 3 years. No need to turn over boat to cover bottom.

**Herter Fibreglas Has 5 Times The Tensile Strength of Steel**

Will stop a bullet, is rotproof, wormproof, corrosionproof, non-deteriorating, permanently colored if desired.

If you own a boat or plan on building one you cannot afford to be without this booklet. Write for it today.

Pioneers of boat covering, bulletproof vests, racer bodies, airplane bodies by Herter Fibreglas Processes.

**HERTER'S, INC.**  
Manufacturers, Exporters, Importers, Industrial Chemists  
Waseca, Minnesota, U. S. A.

1952

**GUARANTEED SOLD AT LESS  
THAN WHOLESALE PRICES**

● 14 ft. Takes outboards up to 25 Horsepower. Made of Owens Corning fiberglass and duraluminum. Made in off season to give work to decoy plant.

**\$227.00**  
Guaranteed \$600.00 value. May be left outside the year around. Unconditionally guaranteed.

**FOB Waseca**

**WRITE FOR CATALOG DEPT. CAFW**

**HERTER'S** Waseca, Minn. Since 1893



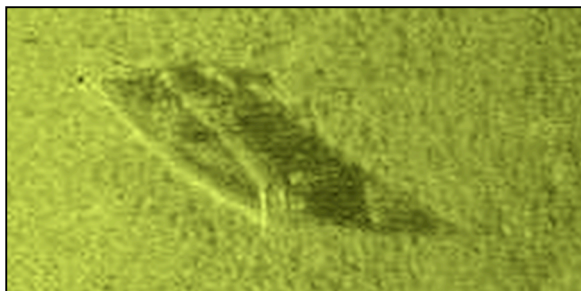
MHM contends Anomaly 601 is a “Herter’s World Famous Model Hudson Bay 14 Foot Boat” outfitted with the duraluminum foredeck, bow casting, dashboard, steering wheel, steering gear, windshield, and front seats with a back. This configuration resembled the 1957 Mark III Runabout, but MHM contends the Herter’s Wreck is a Model Hudson Bay with accessories due to the overall vessel design – the 1957 Hudson Bay and the 1957 Mark III hulls are the same design and configuration, with a 7.00 inch difference in the amidships beam. The presence of oarlocks that were standard on open-hull designs, and not on runabout models, is also a Model Hudson Bay attribute. Further, the 1960 manufacturing date of Anomaly 601 – if reported correctly to the DNR – indicates the wreck cannot be a Mark III since that season saw the boat with large stern fins and wide gunwales. However, in 1960 the foredeck Herter’s offered as an option on the Model Hudson Bay was only 34.00 inches long as opposed to the 47.75-inch example offered in 1957 (Herter’s 1957, 182, 1959, 44, 1960, 190-192, 1961, 196). MHM contends the longer foredeck was in Herter’s inventory in 1960 when Anomaly 601 was constructed and because the customer wanted the boat outfitted with a steering wheel and windshield, the longer deck was used. Lastly, the wreck’s hull is Herter’s navy blue, the color still rich below the silt. The Herter’s Model Hudson Bay Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.

### **Crestliner Admiral Wreck Site (Anomaly 689)**

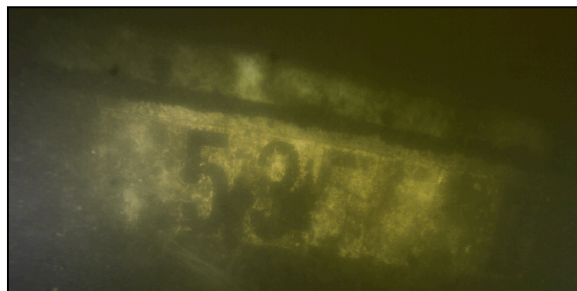
MHM recorded a sonar image of the area where Anomaly 689 is located during the LMS-2 Project in May 2012. However, the sonar footage recorded at the time showed no evidence of a wreck at or near the specific coordinates, only submerged vegetation and lake bottom contours. MHM friend and supporter Mike Brill sent MHM a sonar image of Anomaly 689, along with the coordinates of the site, in July 2017. MHM re-scanned the area and easily located the wreck. In early August, MHM dove on the site and identified her as a smooth-hull aluminum Crestliner Admiral wreck that is 16.00 feet long and 64.00 inches in the beam. The ‘open’ Crestliner Admiral model had 4 wooden benches attached at the vessel’s sides with aluminum brackets and had a small bow casting. However, Anomaly 689 has a foredeck that eliminated the forward bench; in its place is a stabilizing bulwark underneath the deck. At the bow, a lifting handle is attached to the foredeck with a long line attached to it; a towing eye is attached to the stempost. Anomaly 689 originally had 3 wooden benches, but the amidships bench is missing. A significant splash rail extends the entire length of the outer hull both port and starboard. The gunwale, with an aluminum caprail attached by rivets, is intact throughout the wreck and is painted light blue. The hull appears to be unpainted, but a black painted line extends from the bow toward the stern; it is unknown if the line exists along the entire hull. Both the starboard and port quarters have stern corner castings that provide a strong join for the gunwales and the transom. The castings have the cursive ‘Crestliner’ logo on them, along with the words ‘Little Falls, Minnesota’ (Crestliner 1960, 5). The square transom is designed for an outboard motor and is comprised of a wooden motor board held in place by the stern’s aluminum. Stern knees inside the transom provide further strength to the keel and 2 sister keelsons on the hull’s bottom. Two carrying handles with ropes knotted on them are attached to the stern; at

this point, the rounded nature of the wreck's bilge and bottom are evident. Intact floors, attached to the inner hull with rivets, provide athwartships rigidity to the hull and extend up the sides as futtocks. The 1962 Admiral could carry a maximum 45 HP outboard motor and travel up to 27 mph (Crestliner 1961, 15, 1962).

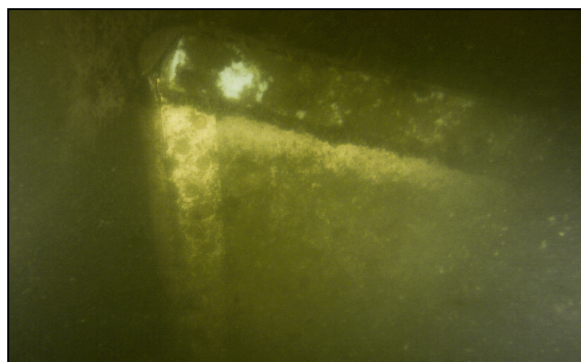
The Crestliner Admiral Wreck has the registration number MN 5355 ER extant on both her port and starboard bow. Two Minnesota year validation stickers are extant, 1 is red, square, and indecipherable, and the other is green and square with an expiration date of December 31, 1995 with other stickers beneath it, one of which is red. In the DNR records, number MN 5355 ER is a 14-foot long - not a 16-foot long – 1962 Crestliner and its last registration expired on December 31, 2015 (John Nordby, personal communication, September 2017). MHM has discovered several wrecks on the bottom of Minnesota's lakes with ambiguous or outright contradictory information that has been reported to the DNR over the years. In considering Anomaly 689, there are explanations for the registration differences: 1. The first owner of the boat reported her size incorrectly; 2. The wreck's last registration was in 1995 but the boat's owner renewed the number until 2015 but put the registration sticker on another watercraft; and 3. The boat sank after May 2012 when MHM conducted the LMS-2 Survey, with the 2015 registration sticker removed prior to the wreck's disposition on the bottom of the lake. If the Crestliner Admiral Wreck sank after May 2012 it would explain the lack of an acoustical signature for the anomaly in MHM's sonar footage. However, MHM has often had difficulties when discerning the signatures of small watercraft located in shallow water among vegetation. In 2017, the area where Anomaly 689 is located lacked significant weeds and therefore, clear sonar images were produced.



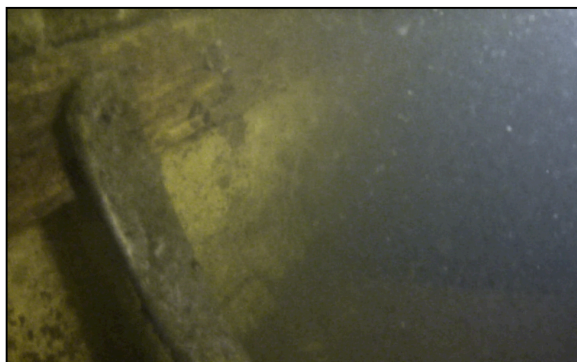
MHM's sonar image of the Crestliner Admiral Wreck.



Minnesota registration number MN 5355 ER (Mark Slick).



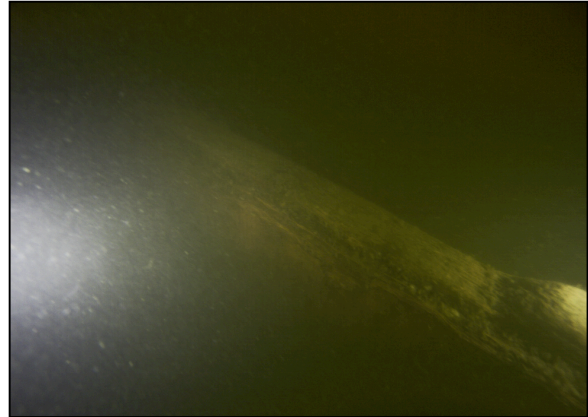
The port bow of Anomaly 689 (Mark Slick).



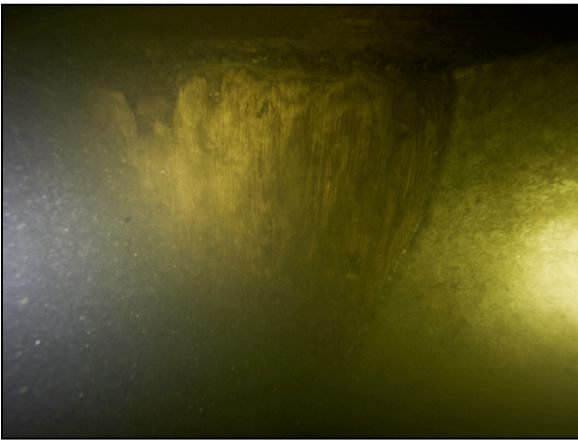
An aluminum bench bracket and a stringer (MHM).



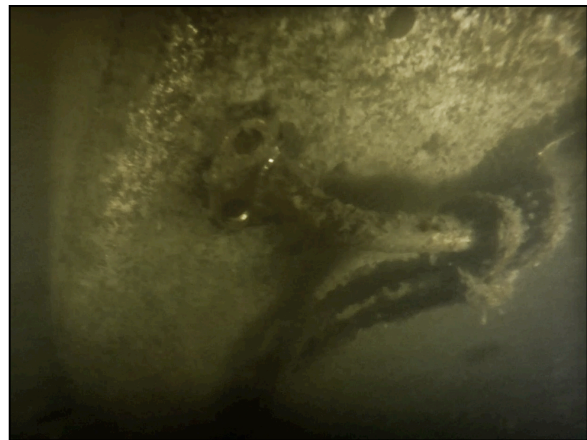
A stanchion and base holding up the aft-most bench (MHM).



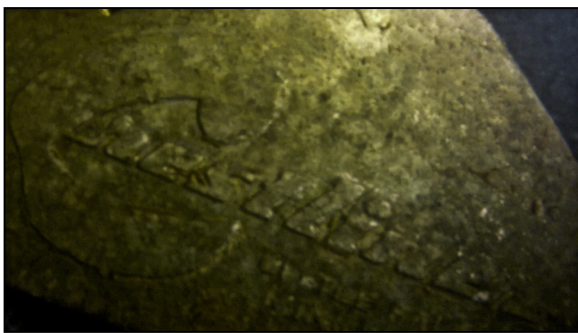
The transom designed for an outboard motor (Mark Slick).



The transom motor board, viewed from outside the hull (Mark Slick).

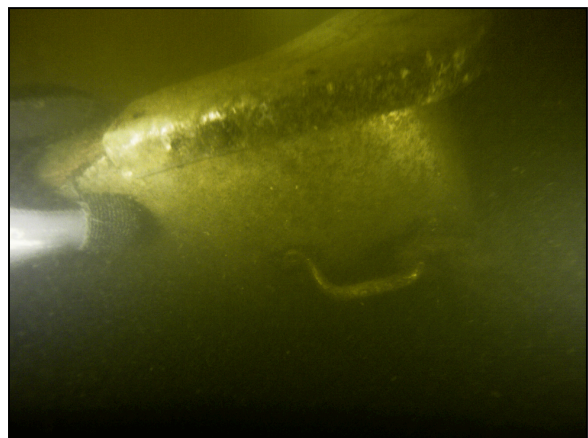


The lifting handle on the port side stern (Mark Slick).



Above: The port side stern casting with words "Crestliner Little Falls, Minn" formed into it (MHM).

Right: The starboard stern casting and stern lifting handle (Mark Slick).



The history of Crestliner boats as a Minnesota company is long and complex. Crestliner was founded in 1946 by World War 2 veteran Robert Wold and Paul Larson of Larson Boat Works in Little Falls with the assistance of a small group of local investors. Wold's idea was to construct boats out of aircraft aluminum after having witnessed the metal's



performance during wartime. Crestliner started out as Larson Watercraft but by 1954, the company was known as Larson Crestliner and in 1957, simply Crestliner. In 1960, Crestliner expanded its holdings to include boatworks in Morrilton, AK, and Waterloo, Ontario, Canada. That same year, Bigelow-Sanford purchased Crestliner and opened a plant in Thompsonville, CT, and in Como, Italy. During the next two decades, Crestliner changed hands several times: Molded Fiberglass Boat Company (MFG, 1964), North American Rockwell Corporation (1970), and American Machine & Foundry (AMF, 1972). In 1980, a group of Crestliner employees secured financing to purchase the company and began production as the Nordic Crestliner Boat Company in 1981. In 1988, Genmar, Inc., the parent company of Larson Boats, purchased Nordic Crestliner and reverted the company's name back to Crestliner (Hunn 2006, 24-26). It is noteworthy that MHM's research boat, *Anomaly 51*, is a 1982 Nordic Crestliner 18.00-foot outboard faux lapstrake aluminum vessel. The Crestliner Admiral Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



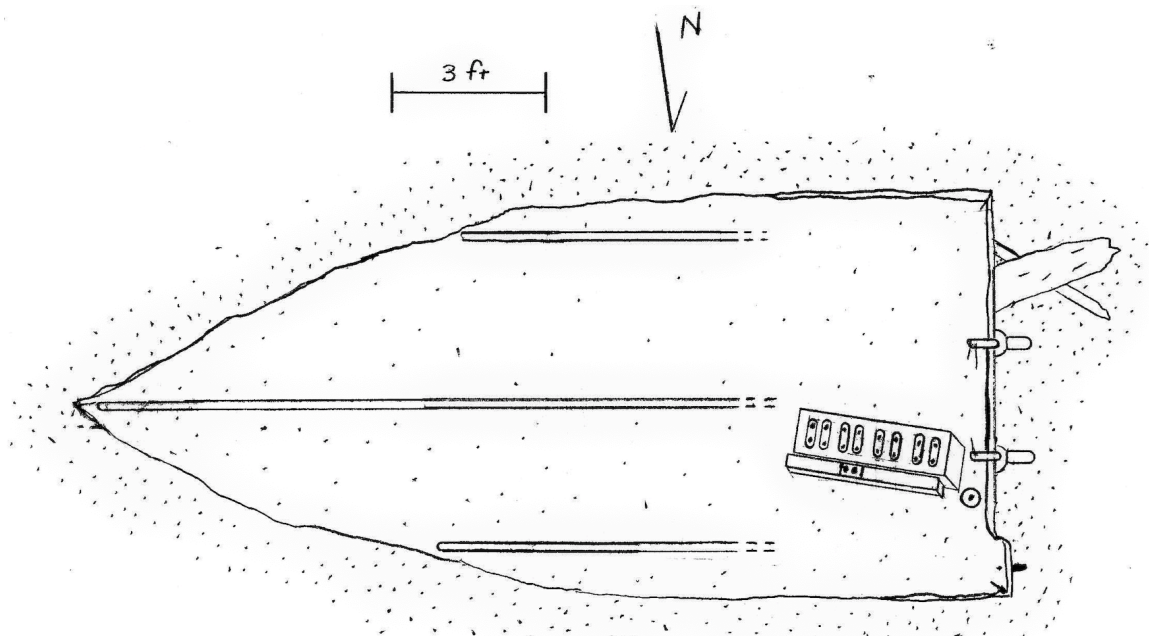
A 1962 Crestliner Admiral with an open design. *Anomaly 689* has a foredeck in place of the bow casting and she does not have four benches (Crestliner 1961, 15)

### **Update: Burned Fiberglass Wreck Site (21-HE-504)**

MHM recorded a sonar image of *Anomaly 600* during the LMS-2 Project in May 2012. In mid-June 2016 it was determined the anomaly is a white-hulled inboard/outboard fiberglass boat that has burned to the waterline. Currently the hull measures 17.80 feet long and 7.80 feet in the beam; the length of the hull at the deck level was at least 19.00 feet long when she was constructed. MHM returned to *Anomaly 600* in mid-June 2017 to take advantage of unusually good visibility in the area where the wreck lies. This season, MHM was able to discern that *Anomaly 600* has 2 outdrives and her starboard side engine – a straight-line 4-cylinder unit – was salvaged after she sank or blew clear of the wreck during the wrecking process. The bow is still pointed, but only extends about 6 inches from the keel on both port and starboard. The transom is comprised of fiberglass and wood, the material actually being a composite of the two; a wooden core covered in thin fiberglass on both sides. At the port quarter, the inner fiberglass layer is entirely gone and the inside wood core is extant, checked and burned black. Also on the

port side, the trailer strap U-bolt is extant near where the gunwale should be; a burned piece of the starboard transom lies within the burned-out hull, with the U-bolt surviving.

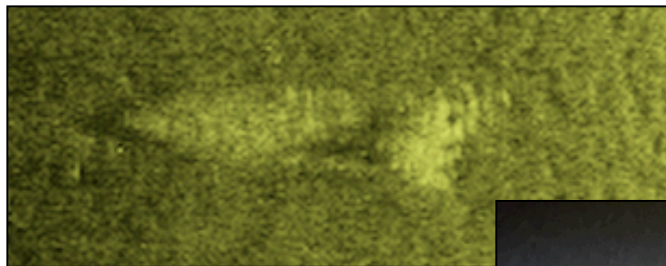
The gunwale has not survived anywhere on the wreck, but a section of it appears to be lying in the silt beyond the starboard stern along with 2 other substantial pieces of hull; one has an unburned rope tied to it. A fire-singed wooden keelson is *in situ* running down the wreck's centerline from the remains of the bow toward the stern. Two fire-singed wooden longitudinal stringers also survive, attached to the wreck at the turn of the bilge on both sides. The port engine is located at the stern, is completely exposed but detached, and it tilts to starboard. The wreck's wiring is seen throughout Anomaly 600, most of it frayed and scorched. The remains of the hull's edges are uneven, evidence of where the flames were extinguished. Long fiberglass threads, remnants of the fire, are seen throughout the wreck layer of fiberglass burned to the waterline. The wreck's bottom rests slightly off the lake bottom due to the formed fiberglass keel, allowing a view of the white hull underneath.



A sketch of the Burned Fiberglass Wreck (21-HE-504, Christopher Olson).

MHM contends the fire that destroyed the Burned Fiberglass Wreck occurred in late June 1965: "A 19-foot runabout caught fire in West Arm when gasoline from a flooded carburetor exploded. One man was blown into the lake, escaping with minor burns, and the other man aboard left the boat of his own accord. Both swam to shore" (*Minnetonka Herald* 1965). The location of the unburned hull pieces off of the vessel support the explosion scenario; one undamaged piece is a section of the gunwale that seemingly blew off the wreck and sank off the stern. Therefore, MHM has determined that Anomaly 600 is the 19-foot long runabout that exploded in the West Arm of Lake Minnetonka in late June 1965. MHM submitted an archaeological site form for the Burned Fiberglass Wreck to the OSA in late September 2017 and received her site number, 21-HE-504, at that time.





MHM's sonar image of 21-HE-504.

The remains of the bow of the Burned Fiberglass Wreck with the wooden keelson still evident. Note the threads of fiberglass (Mark Slick).



Above: The starboard edge of the Burned Fiberglass Wreck with a wooden stringer still attached to the inner surface (Mark Slick).

Right: A section of the surviving transom (Mark Slick).



The starboard quarter of 21-HE-504 (Mark Slick).



The port side transom with a jagged burned edge and the un-burned white hull evident (Mark Slick).





The port side transom remains with its trailer tie-down U-bolt extant (Mark Slick).



The starboard transom with its trailer tie-down U-bolt. Note the burned inner wood core of the composite stern (Mark Slick).



Above: The port side engine  
Below: The port side outdrive (Mark Slick).



Above and Below: The starboard side outdrive (Mark Slick).





## **Jet Stream Wreck Site (Anomaly 84)**

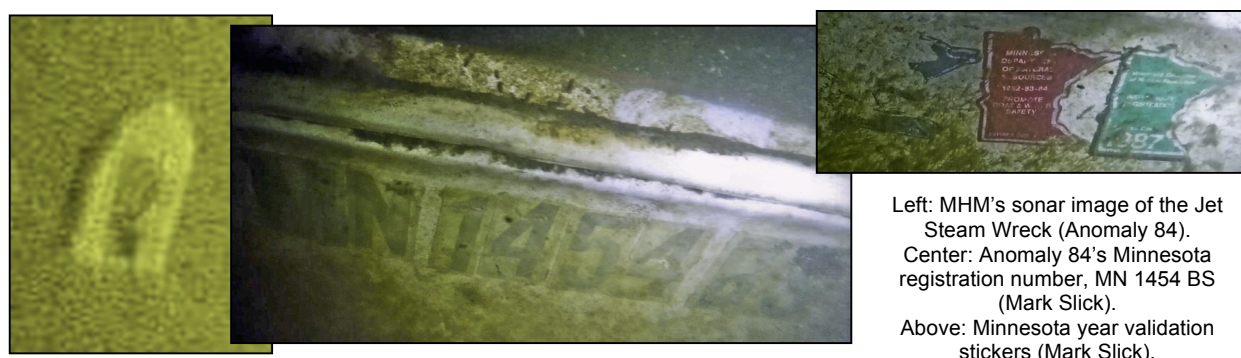
MHM recorded a sonar image of Anomaly 84 in May 2012 during the LMS-2 Project and identified the site in late June 2017. The fiberglass wreck is 14.00 feet long and 65.00” in the beam. The sides, bottom, and foredeck of the wreck are white with red accents on the foredeck, dashboard, and running along the inside the gunwale and transitioning to solid red on the aft gunwale. The transom stern is designed for an outboard motor that is missing, and has an aluminum caprail on the fiberglass stern. The port and starboard quarters flare outward at the gunwale level. The bow is broad and rounded, with a large navigation light incorporated into the fiberglass. The windshield has fallen off of Anomaly 84 and is partly buried in the silt off the starboard side forward. The dashboard had a round tachometer, 2 gimbaled cup holders, and the steering wheel column attached to it. The white steering wheel has 2 spokes and a flat oval button with ‘A’ and a silver swoosh embossed on it. The controller, with a throttle and reversing lever, has been dislodged from the inner gunwale and is lying in the silt to the left of the steering wheel. The steering cables and gas lines are extant and the cables are still engaged with the pulleys that are integrated into the hull inside the motor well. The inside gunwale amidships on both port and starboard has metal attachments for the frame of a bimini or similar top. White step pads are attached to the gunwale on both sides and on the starboard side, a folded and stored swim ladder is attached to the inside gunwale parallel to the pad. A mast light and pole is retracted into the gunwale; at least 1 screw attaching the base plate to the gunwale has been loosened, evidence of an attempted removal of the attribute. At least 2 sets of 4 holes bored into the gunwale on both port and starboard indicate the former locations of metal cleats removed from the wreck prior to sinking. MHM has not ascertained if Anomaly 84 still has seats due to limited visibility and deep silt in the hull. Ironically, a round yellow and blue Minnesota Department of Natural Resources ‘Safe Boater’ sticker is affixed to the port bow.

Four Minnesota year validation stickers are extant on the port bow: one blue sticker is under another with a ‘6’ visible, a partial blue example (1979-1980-1981) expired on December 21, 1981, a red one dated 1982-1983-1984 expired on December 31, 1984, and a green one (1985-1986-1987) expired on December 31, 1987. The Jet Stream Wreck has the registration number MN 1454 BS extant on both her port and starboard bow; in the DNR records, this number is assigned to a “14’ JETS 1963 boat” with a December 31, 1978 expiration date on her last registration (John Nordby, personal communication, July 2017). MHM contends the wreck is a 1963 Jet Stream boat manufactured in Red Wing, MN, and the covered blue sticker with the ‘6’ evident is a 1964-1965-1966 validation, the first registration attained for the boat.

Red Wing Fiberglass Products Corporation (RWFPC), a business Henry and Ann van Westerhuyzen organized in April 1961, constructed Jet Stream boats. However, it seems the company manufactured boats beginning in 1960 and RWFPC declared bankruptcy in December 1961. Midwest Marine Corporation (MMC) of St. Paul leased the RWFPC boat-building facility in Red Wing by May 1962; MMC then purchased the plant and the company’s assets. Further, in mid-September 1962, MMC purchased 2 buildings and 2.75 acres of land from Red Wing Marine Corporation (RWMC). RWMC,

in turn, leased 1 of the buildings to continue their boat construction and engine-building operations. In the other building, MMC fabricated aluminum and fiberglass boats, including their Mariner line (*Daily Republican Eagle* 1962; Research Division 1961, 51. 138; MN Secretary of State; Rhude 2012; Wangstad ND). The Jet Stream Wreck's construction date of 1963, recorded by the State of Minnesota, is possible if MMC used a RWFPF-fabricated hull already in stock when the production of Mariner boats began in late 1962 for sale in 1963. This argument is strengthened by a round metal attribute attached to the molded splash rail on the port and starboard quarters of Anomaly 84. This round emblem and splash rail are also seen on the outer hulls of 1963 Mariner models Bosun (14 feet long), Chief (14 feet long), and Captain (14 feet long). Further, the steering mechanism extant at the stern motor well of Anomaly 84 is also found on the Mariner boats with the same pulley configuration (Midwest Marine, Inc. 1963).<sup>5</sup> Therefore, MHM asserts Anomaly 84 is a Jet Stream-Mariner hybrid constructed in 1963 by Midwest Marine under the Jet Stream brand. Lastly, the issue of the recorded expiration date of the wreck's last registration validation sticker must be addressed. Anomaly 84 has 2 later stickers - 1979-1980-1981 and 1985-1986-1987 - on her hull yet officially, she was last registered in 1978. This discrepancy can only be explained in one way: her owner registered a different boat during those years but put the validation stickers onto the Jet Stream – for reasons unknown. MHM has determined a sinking date of 1987 is reasonable.

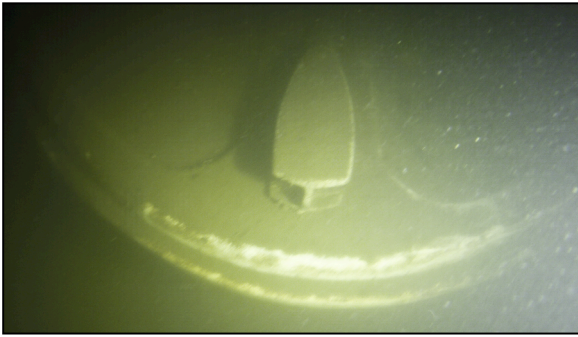
Unfortunately, MHM located only 2 references to Jet Stream boats in newspapers. The owner of Vining Creamery in Fergus Falls placed a notice: "For Sale, 1960 15-ft. Jet Stream fiberglass boat, 65 in. beam, 34-in depth, with 35 h.p. Mercury motor and Chattanooga trailer" (*Fergus Falls Daily Journal* 1962). This entry is particularly interesting because it upholds the contention that the RWFPF first produced Jet Stream boats in 1960 as mentioned above. The other reference is a November 1972 auction notice near Park Rapids where a "12' Jet Stream Fiber Glass Boat, complete w-trailer, 25 hp motor, windshield, remote control" was on offer (*The Pioneer* 1972). Anomaly 84 cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



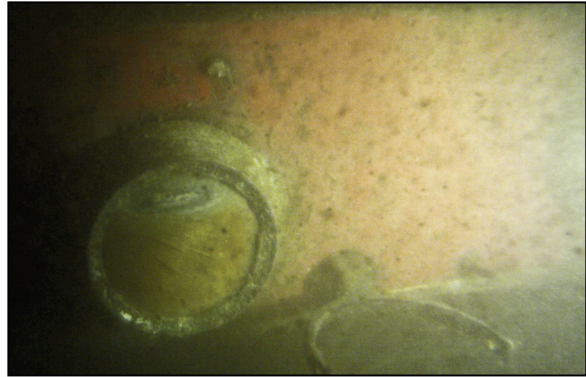
Left: MHM's sonar image of the Jet Stream Wreck (Anomaly 84).  
Center: Anomaly 84's Minnesota registration number, MN 1454 BS (Mark Slick).  
Above: Minnesota year validation stickers (Mark Slick).

<sup>5</sup>Another example of a boat-building company taking advantage of already-formed fiberglass hulls after a business dissolution is Minnesota's Pipestone Manufacturing Company's 1968 offering, the 14-foot fiberglass Aqua-Maid runabout (Pipestone Manufacturing Company, 1968) The hull of the Aqua-Maid is a Span/Span America Nomad hull with the distinctive exaggerated faux lapstrake/clinker-built formed hull aft, with a smooth hull forward. Span dissolved in 1967.

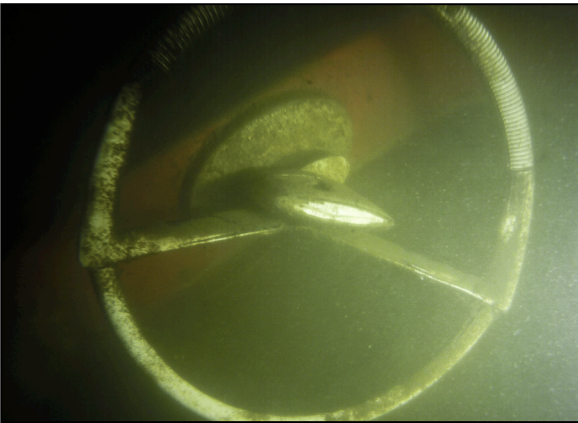




The bow and navigation lights of the Jet Stream Wreck (Mark Slick).



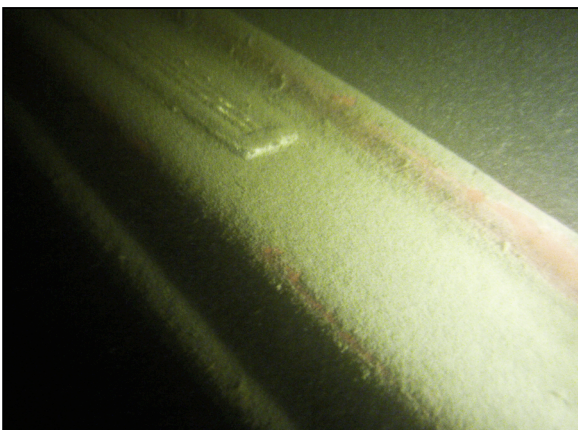
The speedometer and a cup holder, attached to the dashboard (Mark Slick).



The white steering wheel with an oblong button – it has an 'A' on it, above a swoosh (Mark Slick).



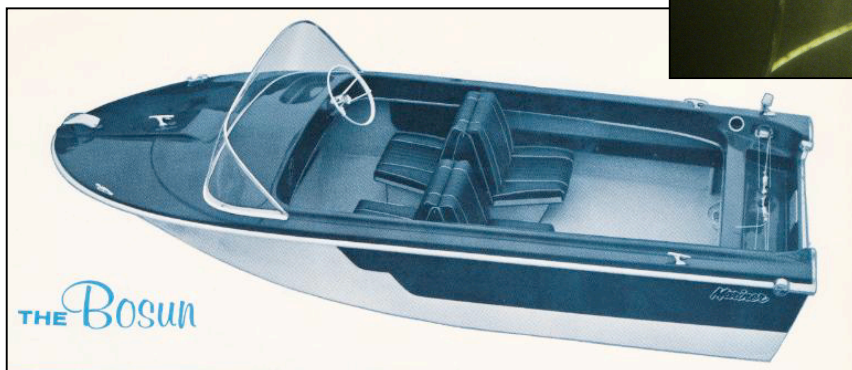
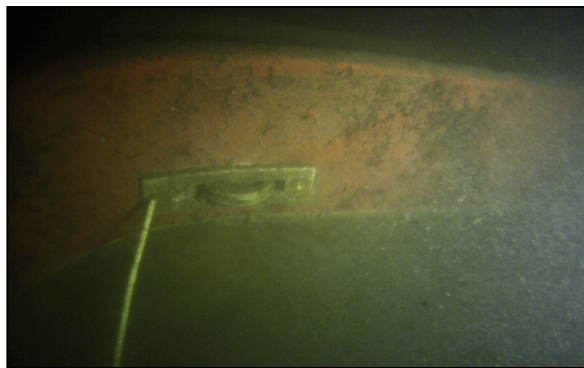
The mast light on the starboard quarter, retracted into the hull (Mark Slick).



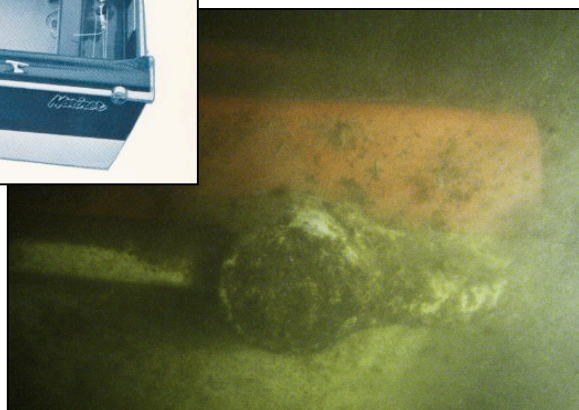
Amidships, a white step pad is attached to the port side gunwale (Mark Slick).



A Minnesota Department of Natural Resources 'Minnesota Safe Boater' sticker, located on the port side bow (Mark Slick).



The pulley system attached to the inner motor well at the port and starboard stern is seen in the top photos and in the Mariner Bosun. The round stern quarter attributes on the Jet Stream are also seen on the Bosun (Mark Slick, Mariner Marine, Inc., 1963, fiberglass.com).

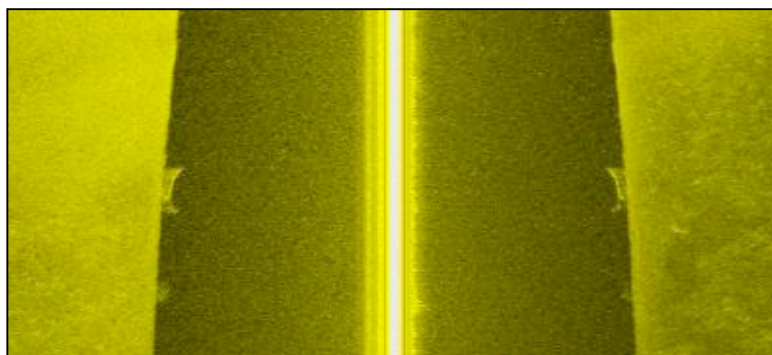


### Forester Shagawa Canoe Wreck (Anomaly 694)

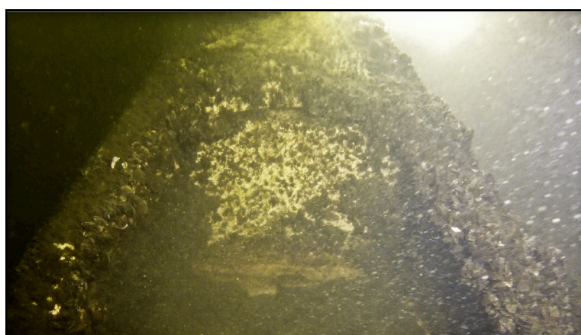
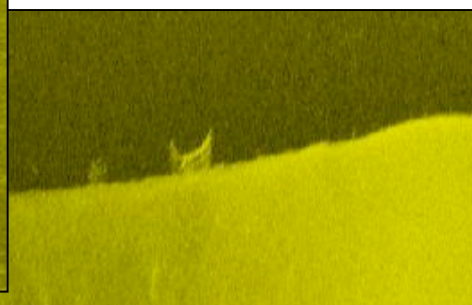
MHM recorded a sonar image of Anomaly 694 in May 2012 during the LMS-2 Project and identified the site as the white fiberglass Forester Shagawa Canoe Wreck in mid-September 2017. Anomaly 694 is 17.00 feet long and 36 inches in the beam. The fore and aft decks, 2 non-slip seats (colored blue) and 3 thwarts (the amidships example is formed to act as a carrying yoke) are integrated into 1 molded piece of fiberglass. A thin aluminum rubrail is affixed to the gunwale increasing the canoe's strength. This list of attributes identifies Anomaly 694 as the Shagawa model. At the bow and stern, closed air-filled chambers supply flotation, a triangular towing loop with rope attached is extant at the bow, and a small bit of rope is attached at the stern. A rope is looped around the forward thwart and may be attached to something lying in the silt. A builder's plate is attached to the bulkhead inside the stern, with the Forester Boats address and the serial number of the canoe: 175194. The lack of a hull identification number plate on the starboard side quarter indicates Anomaly 694 was manufactured between 1965 (the beginning of Forester boat-building, MN Secretary of State) and November 1972, when HINs were first required on watercraft. The port bow has a fragmentary round yellow Minnesota year registration validation sticker and the starboard bow carries a newer



round blue sticker with white lettering and graphic. The only identifiable attributes on the blue sticker are the shape of Minnesota and the word 'Resources'. At present, MHM cannot determine why or when Anomaly 694 sank. However, the blue validation sticker is a 1976-1977-1978 example and the round yellow sticker is a 1980-1981-1982 example; apparently the canoe's owner allowed the registration to lapse in 1979. MHM contends Anomaly 694 is the Forester Shagawa model based on its size and design; 17.00 feet long, 36.00 inches wide, rounded ends (as opposed to a fantail), and fiberglass construction. The Forester Shagawa Canoe Wreck cannot be categorized as an archaeological site at this time, but she is a State and Federally protected maritime historical resource.



MHM's side and down sonar images of Anomaly 694.



The bow and bulwark of Anomaly 694 (MHM).



The starboard bow (MHM).



The Forester Boats, Inc. builder's plate is on the stern bulwark. It was engulfed in zebra mussels, but once they were cleaned, the serial number 175194 could be ascertained (MHM).





The white molded fiberglass benches have blue non-slip surfaces (MHM).



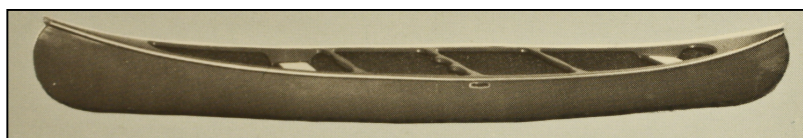
A thick rope is attached to something underneath the forward thwart (MHM).



The State of Minnesota validation stickers affixed to the port and starboard bow of the Forester Shagawa Canoe Wreck and unused examples indicate what they looked like when new (MHM; sticker images courtesy of the Minnesota Department of Natural Resources ).

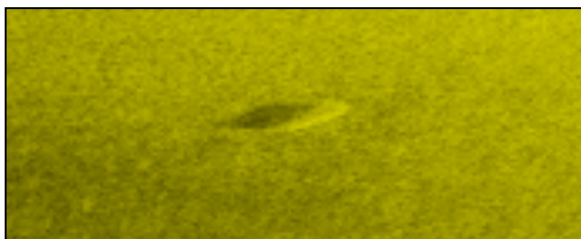


Forester's 17-foot Shagawa canoe was sold for several years, probably beginning in 1965 when the company was established. These images, from 2 Forester brochures, were not dated but MHM contends they were produced in the late 1960s and early 1970s (Forester Boats, Inc, ND).



### Boat Hatch Cover Site (Anomaly 256)

MHM recorded a sonar image of Anomaly 256 in September 2011 during the LMS-1 Project and identified the site in early July 2017 as a white boat hatch cover. The cover is 2.50 feet long and 2.25 feet wide.



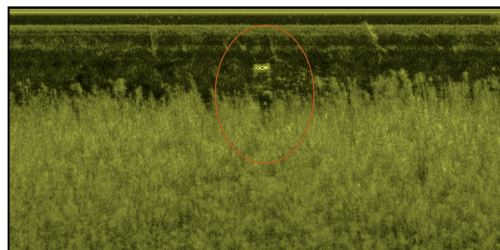
MHM's sonar image of Anomaly 256, the Boat Hatch Cover.

### Marine Launch Boiler Site (21-HE-503)

MHM recorded a sonar image of Anomaly 117 in May 2012 during the LMS-2 Project and identified the site in early June 2017. Anomaly 117 is a horizontal single pass marine launch fire tube boiler<sup>6</sup> that is made of steel and riveted together. The boiler has a steam dome<sup>7</sup> and it is imbedded with its firebox<sup>8</sup> end down in the silt – standing up in the water column. Anomaly 117 stands 8.20 feet tall and there is at least 10% of the boiler still buried. The boiler drum<sup>9</sup> is 2.20 feet in diameter, the steam dome is 1.30 feet in diameter, and the firebox is 4.10 feet in diameter. Two washout plugs are attached to the front of the firebox to allow rinse water and dislodged scale to leave the boiler after a maintenance wash. Remnants of the smoke box - a metal structure at the end of the boiler barrel to collect combustion gases out of the boiler and into the smokestack - are attached to the edges of the end of the boiler barrel. Boilers of this size in a marine context are referred to as 'launch boilers' – and Lake Minnetonka was rich with medium-sized steam launches. Anomaly 117, along with the 4 launch boilers that comprise the Marine Launch Boilers Site (21-HE-421) in Lower Lake Minnetonka, represent the only known surviving Lake Minnetonka marine boilers that were utilized during the lake's 'heyday' of steam navigation (the water tube boiler on the operating steamboat *Minnehaha* is modern).



MHM's side and down sonar images of 21-HE-503.



<sup>6</sup>In a single pass boiler, the gases of combustion pass only once through the fire tubes that run horizontally through the length of the boiler.

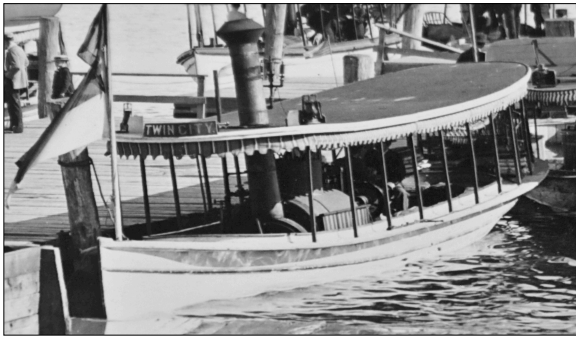
<sup>7</sup>The steam dome is the collection point for steam on top of the boiler from where the steam is subsequently directed to the steam cylinders of the engine in order to provide power.

<sup>8</sup>The firebox is the furnace where the fuel, either coal or wood, was burned.

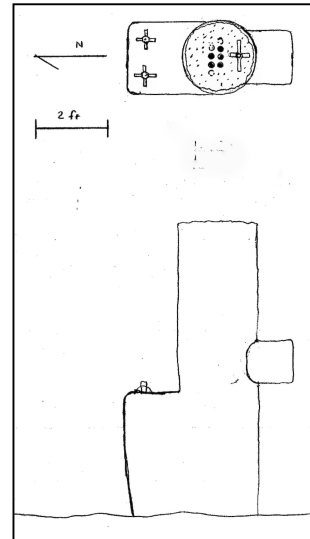
<sup>9</sup>The drum is the body of the boiler where the water turns to steam.



Left and Above: The Marine Launch Boiler Site, 21-HE-503 (Kelly Nehowig).  
Below: A sketch of 21-HE-503 (Christopher Olson).



The medium-sized steam launch *Twin City* carried a horizontal fire tube boiler with a steam dome (HE5.11T.r9, Minnesota Historical Society, digitized by MHM).



The context of the Marine Launch Boiler Site – a large suburban lake that was plied by a variety of steamers under 300 feet long – indicates it likely powered a medium-sized steam launch in the 1880s-1910s. The majority of steamers on Lake Minnetonka used fire tube boilers, although there are six notable exceptions to this generally held-rule – the Lake Minnetonka Streetcar Boats *Como*, *Harriet*, *Hopkins*, *Minnehaha*, *Stillwater*, and *White Bear* carried the Roberts Safety Water Tube Boiler developed in 1902 in Chicago (Hield 1910, 2). MHM has located images of several Lake Minnetonka steamers that carried horizontal fire tube steam boilers. Depending on wear and tear, marine boilers would often be replaced by newer models or a steamer would be converted to internal combustion, replacing the steam power plant entirely, or the machinery (boilers and engines) would be recycled out of vessels that were being



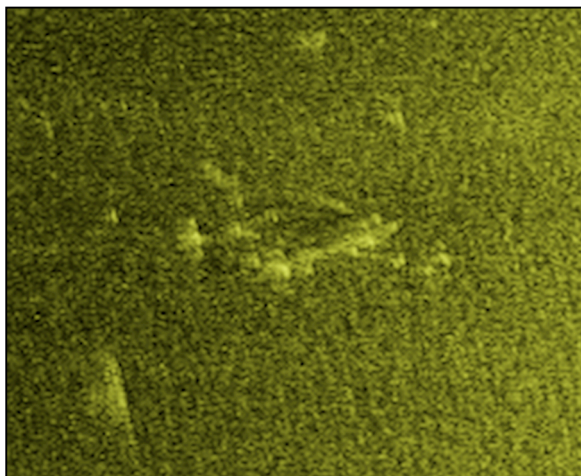
dismantled. There is evidence of these activities in the historical record pertaining to Lake Minnetonka, including those of the Twin City Rapid Transit Company during the dismantling of the steamers *Minneapolis*, *St. Paul*, *Minnetonka*, *Puritan*, *Plymouth*, and *Mayflower*.

A few examples of mid-sized steam launches on Lake Minnetonka that carried horizontal steam boilers that are similar to Anomaly 117 are the *Fresco/Why Not?* (built 1877, disposition unknown after 1902), *Hawkeye/Reindeer/Archie* (built 1880, disposition unknown after 1909), *J.Y.C./Hebe* (built 1883, disposition unknown after 1899), *Alert* (built 1884, dismantled 1897), and *Minnesota/Twin City/Rambler* (built 1884, burned and sank, boiler disposition unknown, 1910) (McGinnis 2010; MHS historic photographs). It was not cheap or easy to remove boilers from steamboats in terms of labor costs, the equipment required, and the use of a tug and barge to transport them. With this known, MHM contends the boiler was removed from a medium-sized steamer for recycling or re-use in another vessel, but was then unintentionally dumped in the lake. However, it is impossible to determine if the disposition of the boiler was intentional or unintentional. Another recorded example of recycling is shown in the TCRT ledgers pertaining to the sale of the used engines and boilers of the vessels mentioned above, as well as thousands of items from the defunct Big Island Amusement Park including such things as benches, amusement ride parts, wiring, and tables – anything a person was willing to purchase. Many of the Big Island Park commodities were held for 6 years and longer after the park closed in 1911, indicating a willingness to hold onto inventory in order to recoup expenses. Valuable items such as boilers would be worth storing for a time if a steamer operator had a bit of space until they could be sold. Alternatively, the boilers could have been discarded by whomever removed them from their former vessels and the quickest, cheapest, and easiest option to dispose of them was to force them off a barge. The site formation date of around 1911 reflects the trend of Lake Minnetonka vessels being powered by gasoline engines 10-15 years earlier and the greatly reduced number of steamers on the lake by that date. After 1911, the only steamboats still active on the lake were the Streetcar Boats of the TCRT, the tugs *Priscilla* and *Hercules*, and the vessels the TCRT purchased from Captain John R. Johnson (the *Puritan*, *Mayflower*, and *Plymouth* were decommissioned by 1914 and their boilers were sold in 1917 (McGinnis, 2010; TCRT Construction Ledgers, 1917). MHM submitted an archaeological site form for the Marine Launch Boiler Site to the OSA in mid-September 2017 and received the site number, 21-HE-503, at that time.

### **Boat Lift Site (Anomaly 88)**

MHM recorded a sonar image of Anomaly 88 in May 2012 during the LMS-2 Project and identified the site as a boat lift in mid-June 2017. Like Anomaly 622 identified in 2016 as a boat lift, Anomaly 88 has a hand crank to raise a boat out of the water instead of a large wheel. No canopy is attached to Anomaly 88, but it may have had one before it sank – possibly Anomaly 85 – a canopy frame located to the north. Anomaly 88 likely blew into the lake during high winds, and it landed upright. Since its sinking, boaters or fishermen have lost a mud/river anchor and a Danforth anchor on Anomaly 88; the

anchors were snagged and trapped by the boat lift. Anomaly 88 is 7.70 feet long by 4.50 feet wide and is a protected maritime cultural resource under the jurisdiction of the DNR.



Above: MHM's sonar image of Anomaly 88.



Right: Images of the Boat Lift, Anomaly 88 (Mark Slick).



### **Capsized Barrel Raft Site (Anomaly 670)**

MHM recorded Anomaly 670's acoustical signature in May 2012 during the LMS-2 Project and identified it in mid-June 2017. It measures 9.50 by 12.00 feet and is constructed of wood and metal. Each pontoon is comprised of three 55-gallon drums that are rusty, with large holes. The raft's platform is buried on silt due to the capsized nature of Anomaly 670. Anomaly 670 is a protected maritime cultural resource under the jurisdiction of the DNR.

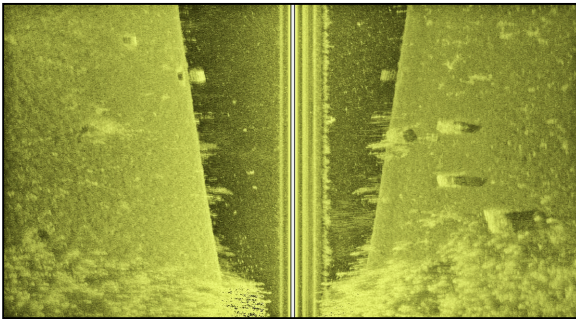


MHM's sonar image of Anomaly 670 and an image of one of the barrel pontoons (Mark Slick).



### Fish Cribs Site (Anomaly 692)

MHM recorded a sonar image Anomaly 692 in May 2012 during the LMS-2 Project and identified it in early August 2017 at the urging of MHM friend and supporter Mike Brill. The site is comprised of 7 square and rectangular fish cribs comprised of wooden pallets, rope, and twine. MHM investigated 2 of the cribs: Crib A is comprised of 2 cribs attached together and it measures 5.10 feet wide by 7.90 feet long by 5.40 feet high and Crib B is 4.00 by 4.40 feet by 4.70 feet high. The cribs were placed on the lake bottom, likely on the ice during winter, to make good fishing spots. MHM surmised that the DNR may have placed the cribs on the bottom of the lake to create a fish habitat. After conferring with a DNR representative, MHM learned that the department would not approve of such structures if a permit had been requested by a member of the public (Taylor Polomis, personal communication, August 2017).



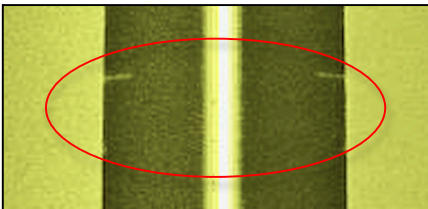
Above: MHM's sonar image of the Fish Cribs Site.

Right: Crib B, covered in zebra mussels (Kelly Nehowig).



### Anchor Site (Anomaly 653)

MHM recorded a sonar image Anomaly 653 during the LMS-1 Project in September 2011 and identified the site in mid-June 2017. The sonar image suggests Anomaly 653 is an object standing vertically in the water column accompanied by a partially buried feature. Actually, Anomaly 653 is tall vegetation with a mud/river anchor sitting nearby. The anchor was not visible in the sonar footage because of its size – locating it the result of chance and its proximity to the tall vegetation. Anomaly 653 is a maritime cultural resource that is protected under the jurisdiction of the DNR.

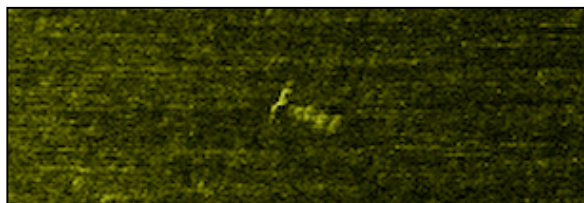


Above: MHM's sonar image of Anomaly 653.  
Right: The tall weeds and partially buried mud anchor (Mark Slick).



### Update: Possible Buried Car and Anchor Site (Anomaly 599)

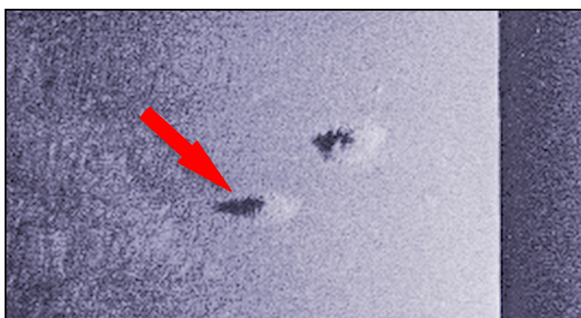
MHM recorded a sonar image of Anomaly 599 in May 2012 during the LMS-2 Project and dove on the site in mid-June 2016. The site has zero visibility, but with strong lights it was determined the site is comprised of a jumble of metal, glass, wood, and a Danforth anchor that is mostly buried in silt. MHM returned to Anomaly 599 in mid-June 2017 to take advantage of unusually good visibility in the area where the site lies. This season, MHM was able to discern that Anomaly 599 is likely a mostly buried motor vehicle, lying on its side. The only accessible part of the anomaly, through the silt, appears to be a damaged door with its window retracted inside the door's body.



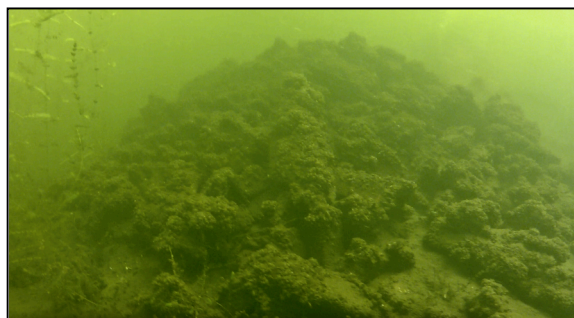
MHM's sonar image of Anomaly 599, a possible buried car with a Danforth anchor caught on it.

### Rubble Pile (Anomaly 544b)

In November 2011, MHM recorded a sonar image of two similar objects near each other, but not near enough to each other to cover during the same dive. In mid-August 2015, one of the objects (Anomaly 544a) was identified as a collection of bricks, metal, and ceramic sewer pipe. It is assumed Anomaly 544a was discarded after a structure was torn down, either left on the ice or dumped from a barge. Anomaly 544b was investigated in late June 2017 and like Anomaly 544a, is a pile of bricks that measures 5 feet by 16 feet. Anomaly 544b is a maritime cultural resource that is protected under the jurisdiction of the DNR.



MHM's sonar image of Anomaly 544; the arrow indicates 544b.

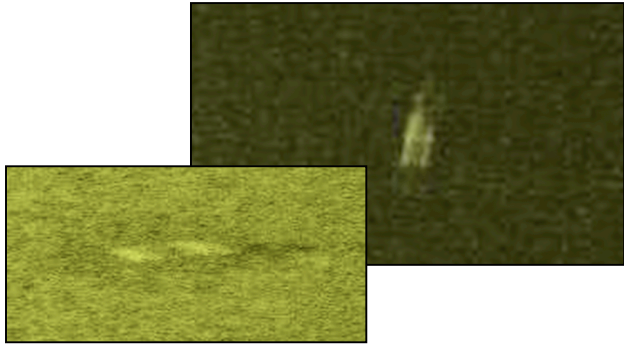


The majority of the Rubble Pile is comprised of bricks (Josh Knutson).

### Barrels (Anomaly 651 and Anomaly 674)

MHM recorded a sonar image of Anomaly 651 in October 2011 during the LMS-1 Project and identified the site as a barrel in early June 2017. MHM recorded a sonar image of Anomaly 674 in May 2012 during the LMS-2 Project and identified the site as a barrel in early July 2017.





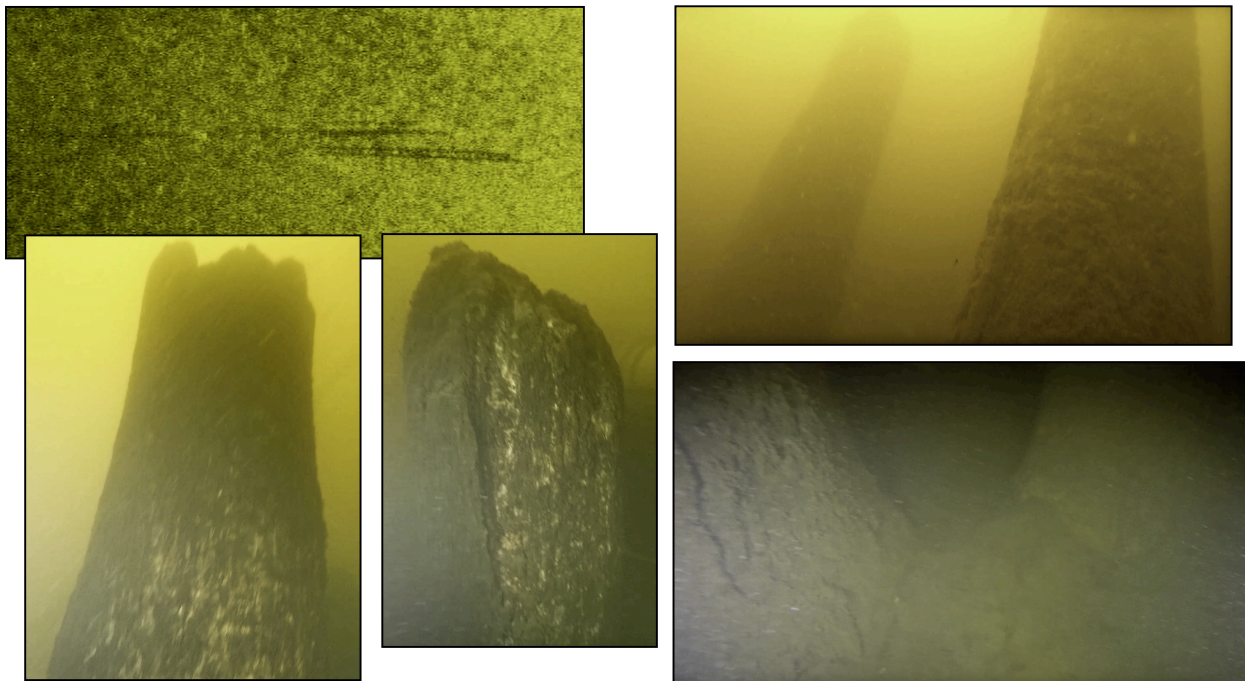
MHM's sonar images of Anomaly 651 (behind) and Anomaly 674 (in front).



Anomaly 651 (Mark Slick).

### Five Tree Stumps (Anomaly 76)

MHM recorded a sonar image of Anomaly 76 in September 2012 during the LMS-2 Project. The anomaly appeared to be an object with at least 3 taller attributes standing in the water column that cast significant acoustical shadows. In mid-June 2017, MHM identified Anomaly 76 as a 5 tree stumps. MHM contends the stumps were dragged onto the ice to dispose of them and sank during ice out. The root balls are buried in the silt and the stump ends are jagged indicating they were not cut; the trees likely snapped and fell in high winds. Anomaly 76 is the fourth instance of tree stumps identified in open water and not along a Lake Minnetonka shoreline; Anomaly 13 in Browns Bay Anomaly 225 south of Gale Island, and Anomaly 563 in Wayzata Bay are the others.



MHM's sonar image of Anomaly 76 and images of some of the tree stumps, including two of them emerging from the lake bottom (Mark Slick).

**Anomalies 625, 690**

Sonar images of Anomalies 625 and 690 were recorded during the LMS-1 and LMS-2 Projects in 2011 and 2012. These two anomalies were identified during the LMNA-7 Project as unprocessed trees.

**Anomalies 129.6, 579, 581, 614, 671**

Sonar images of Anomalies 129.6, 579, 581, 614, and 671 were recorded during the LMS-1 and LMS-2 Projects in 2011 and 2012. Their sonar signatures suggested they might be human-made objects because they had substantial acoustical shadows and their shape suggest straight lines. After diving on these anomalies during the LMNA-7 Project, it has been determined that they are rocks.

**Anomalies 90, 113, 125.3, 456, 465, 475, 690, 623, 630, 646, 648, 649, 673, 675**

MHM recorded sonar images of Anomalies 90, 113, 125.3, 456, 465, 475, 690, 623, 630, 646, 648, 649, 673, and 675 during the LMS-1 and LMS-2 Projects. They were determined to be false targets during the LMNA-7 Project. The anomalies were contours on the lake bottom that suggested human-made objects.



## Conclusion

The LMNA-7 Project produced interesting and significant results, particularly identifying 7 new wrecks, 6 new maritime sites, 2 ‘other’ sites, and 2 known sites are now further understood. These wrecks and sites join dozens of other submerged cultural resources already identified in the lake. Comparing and associating these new sites with known sites increases our understanding of the historical context within which these cultural resources operated or were exploited by Minnesotans. Firstly, the Fisherman's Friend Wreck 3 (21-HE-499) is noteworthy because of its athwartships bottom planking and keel-less design, a construction method that required less skill to accomplish but was nonetheless a sturdy design of the late 19<sup>th</sup> and early 20<sup>th</sup> Centuries. Of the **15** small wooden wrecks identified on the lake bottom to date,<sup>10</sup> this wreck – along with the Fisherman's Friend Wreck (21-HE-485), Fisherman's Friend Wreck 2 (21-HE-489), and Flat-Bottomed Rowboat Wreck (21-HE-488) – are the only small examples with athwartships bottom planking. For comparison, the Hopper Barge Wrecks (21-HE-441), two of the larger wooden wrecks in the lake, are also athwartships planked. These 2 large and sturdy work boats were constructed by master craftsman Captain John R. Johnson of Excelsior.<sup>11</sup> These 6 examples of athwartships planked vessels, 2 large and 4 small, were similarly constructed. However, the skill level needed to produce them was vastly different; 3 of the small rowboats (21-HE-485, 21-HE-489, 21-HE-499) could have been constructed by a local boatworks or by an individual with minimal construction experience. The other small wreck (21-HE-488) and the Hopper Barges required more knowledge of watercraft construction and skill to produce.

The turn of the 19<sup>th</sup> Century saw the introduction of the internal combustion outboard motor. In the 1910s, fast outboard motor boat racing emerged as a popular pastime and spectator activity on Lake Minnetonka. The Hydroplane Wreck (21-HE-501) represents an early attempt to construct a fast racing boat seemingly without an extensive knowledge of watercraft construction. The wreck is light and well designed, but the metal sheathing on the wreck's bottom and past the turn of the bilge adds unnecessary extra weight without any benefit to the boat's performance. The Hydroplane Wreck 2 (21-HE-502), while of the same basic type as 21-HE-501, has an advanced design would have been a much faster racing boat. In contrast, the Wooden Motor Boat Wreck 3 (21-HE-500) was designed to provide its owner a comfortable, sturdy, and heavier fishing boat; providing stability was this reason behind the construction and design of this boat. Likewise, the chrome fiberglass 1960 Herter's Model Hudson Bay Wreck (Anomaly 601) is an open fishing boat augmented with a foredeck, dashboard and steering wheel, and backed seats for comfort and better vessel control than a tiller-controlled outboard motor. MHM is particularly interested in wrecks like 21-HE-499 (and 21-HE-485 and 21-HE-489 identified during the LMNA-5 and LMNA-6 Projects), 21-HE-

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<sup>10</sup>Gideon Bay Wreck (21-HE-415), Wayzata Bay Wreck (21-HE-417), St. Louis Bay Wreck (21-HE-422), Crystal Bay Rowboat Wreck (21-HE-457), Wooden Motor Boat Wreck (Anomaly 467), Maxwell Bay Rowboat Wreck (21-HE-469), Fisherman's Friend Wreck (21-HE-485), Wooden Sloop Wreck (21-HE-486), North Arm Rowboat Wreck (21-HE-487), Flat Bottomed Rowboat Wreck (21-HE-488), Fisherman's Friend Wreck 2 (21-HE-489), Fisherman's Friend Wreck 3 (21-HE-499), Wooden Motor Boat Wreck (21-HE-500), Hydroplane Wreck (21-HE-501), Hydroplane Wreck 2 (21-HE-502)

<sup>11</sup>See MHM's *LMNA-3 Project Report* for more information.

500 (and Anomaly 467 identified during the LMNA-4 Project), and Anomaly 601, sites that are comparable to small watercraft MHM has documented and 3D scanned in local museums, and identified through previous underwater archaeology projects. MHM has analyzed the 1910s Ramaley Fisherman's Friend Row Boat, Cokato Boat Works wooden fishing boat constructed in 1952, and a Herter's Model St. Lawrence open boat constructed in 1956 during the Minnesota Small Craft Project.<sup>12</sup> For comparison, the Wooden Motor Boat Wreck (Anomaly 467) identified during the LMNA-4 Project is of similar size and construction, but was built in 1960. This time-tested small wooden boat design was use on Lake Minnetonka for several decades in the middle 20<sup>th</sup> Century.

The aluminum Crestliner Admiral Wreck (Anomaly 689) is comparable to other wrecks MHM has identified in Lake Minnetonka including Alumacraft wrecks 21-HE-448 (LMNA-3 Project), Anomaly 20.1 (LMNA-2 Project), and Anomaly 462 (LMNA-3 Project), and Lund wreck Anomaly 69 (LMNA-1 Project). Notably, the Crestliner, Alumacraft, and Lund aluminum wrecks are Minnesota-built vessels created by companies that still produce watercraft that were owned and used by Minnesotans on Lake Minnetonka. Additionally, the Minnesota-built chrome fiberglass 1960 Herter's Model Hudson Bay Wreck (Anomaly 601) is associated with several decades of Herter's department-store commercial history that did not focus entirely on watercraft construction. Contrastingly, the Minnesota-built 1963 fiberglass Jet Stream Wreck's (Anomaly 84) manufacturers had short and rocky histories of boat-building that is indicative of dozens of fiberglass boat building companies around the country that sprang up post-World War II.

The mid-1960s-early 1970s Forester Shagawa Canoe Wreck (Anomaly 694), also of Minnesota manufacture, is the first fiberglass canoe identified by MHM on the bottom of Lake Minnetonka. However, Anomaly 694 is the 5<sup>th</sup> Lake Minnetonka canoe recognized in the archaeological record to date, including Anomaly 12 (Aluminum Canoe Wreck), Anomaly 107 (Sea King Aluminum Canoe wreck), Anomaly 500 (Half Canoe Wreck), and the roughly 1,000 year-old Lake Minnetonka North Arm Dugout Canoe (21-HE-438).<sup>13</sup> As more Minnesota canoes are documented, the changes in the watercraft's design will more completely fill-out the historical record of these shallow-draft craft designed to efficiently ply Minnesota's lakes and rivers. Lastly, the Burned Fiberglass Wreck (21-HE-504), while its brand and model are unknown is a representative of Minnesota's over century-long relationship with personal watercraft. When the internal combustion engine began to replace steam-powered boats in the late 19<sup>th</sup> and early 20<sup>th</sup> Century, watercraft operation became possible for 1 person to do since a boiler operator was not longer necessary. The rapid development of the outboard motor set up the proliferation of personal watercraft, firstly made of wood, then aluminum, and then fiberglass.

Other maritime sites identified during the LMNA-7 Project, the Boiler (Anomaly 117), Hatch Cover (Anomaly 256), and Boat Lift (Anomaly 88) represent a vessel power plant,

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<sup>12</sup>See MHM's *Minnesota Small Craft Project Report* (2017) for more information.

<sup>13</sup>See MHM's *Lake Minnetonka Nautical Archaeology 2, 3, and 4 Project Reports* and *Minnesota Dugout Canoe 1-3 Project Reports* for more information.

structural hull piece, and a personal watercraft mooring spot. Other 'maritime-themed' anomalies, the Capsized Barrel Raft (Anomaly 670) and the Fish Cribs Site (Anomaly 692), represent recreation and the activity undertaken by more people on Lake Minnetonka – and Minnesota – fishing. The Mud Anchor (Anomaly 653), while also a maritime object, of course cannot be associated with any particular watercraft. Returning to Anomaly 599 in an attempt to clarify the site's nature, MHM contends it is probably a buried car (with a Danforth anchor caught on it). If in the future MHM acquires more knowledge about the site through historical research, a return to Anomaly 599 may be warranted to answer archaeological questions. The Rubble Pile (Anomaly 544b) represents not only the construction and destruction of a structure, but the habit of disposing of unwanted objects on the ice or dumped from boats; the 2 barrels (Anomalies 651 and 674) and Anomaly 76 (5 tree Stumps) also reflect this habit.

The diversity of nautical, maritime, and underwater sites so far identified in Lake Minnetonka are tangible examples of the rich maritime history of the area. Through research, diving on wrecks and anomalies to collect pertinent data, and ensuring that the collected information is accessible by the public, MHM will continue to investigate Lake Minnetonka's submerged cultural resources into the future. MHM continually re-examines the recorded sonar footage from the LMS-1 and LMS-2 Projects. Further, spot re-scanning has occurred in different areas of the lake using knowledge gained from the comparison of anomalies that have proven to be wrecks or other submerged cultural resources in past projects. Several hundred more anomalies have been identified from this on-going sonar review. The results of the LMNA-7 Project summarized above is connected to all the work that came before and that will come after its completion. It is clear that the types of sites that exist in Lake Minnetonka are diverse, archaeologically and historically significant, and worthy of great attention. To date, the watercraft located on the bottom of Lake Minnetonka represents nearly 1,000 years of Minnesota's maritime history and nautical archaeology. In the historic period, the known wrecks represented in the lake span over 140 years of local maritime culture. The data collected during the LMNA-1-7 Projects have been utilized to create the Lake Minnetonka Multiple Property Documentation Form, a guide that will be used to nominate Lake Minnetonka's submerged cultural resources to the National Register of Historic Places (NRHP). At this point, the Wayzata Bay Wreck (21-HE-401) has been successfully nominated to the NRHP by MHM.



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